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ARI TECHNICAL REPORT
TR-78-A16

Initial Strategies for the Tactical Operations System (TOS) Support of the Command and Control Process

Volume 2: Description of TOS Functions for Division Elements

by

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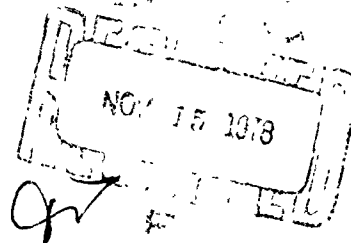
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Army	Data Processing	Personnel	Systems	Tasks																							
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Command & Control	Elements	Sections	Tactical Operations	Training																							
Command Posts	Functions	Staff User	Systems																								
Computer	Man/Machine	Strategies																									
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The impact of the Tactical Operations System (TOS) on the procedures, personnel, and skill requirements for affected staff elements at Army division main and tactical command posts is discussed on an element by element basis. Changes to the current TOS design that would enhance its usefulness to staff users in each element are identified and defined. The material is useful for determining TOS training requirements at the Army division level and providing the rationale for detailed investigation of the feasibility and utility of proposed system enhancements.																											

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INTRODUCTION

This document contains detailed descriptions of how selected staff elements within the main and tactical command posts of a tactically deployed army division are expected to function using the Tactical Operations System (TOS). It is the second of three volumes presenting the results and conclusions of a one year project.

The volume is organized by coordinating staff and special supporting elements when applicable. The elements of the main command post are presented first followed by those of the tactical command post. The data presented for each element are intended to stand alone and represent the TOS impact on that element. The elements viewed collectively present the overall impact of TOS on the division main and tactical command posts.

An explanation of the format and data presented in the element descriptions is provided in subsequent paragraphs and was felt to be necessary to aid in interpreting and understanding some of the data items presented. The format and explanation of the element descriptions is as follows:

- General - Each element description begins with a preliminary statement identifying the element, who supervises its operations, where it is normally located, and the basic responsibilities of the element.
- Mission - The mission of the element is described in terms of its responsibility to the command post or the division.
- Overview of TOS operations - The initial part of the overview indicates where the element is resident within the command post, the consoles available to conduct TOS operations, and the functions and tasks to be accomplished on the TOS console(s). The remainder of the section is devoted to providing a general summary of how each of the functions and tasks could be supported by TOS capabilities.
- Functions and tasks - The functions and tasks section is the major portion of the element description. It contains a task matrix and functions and task descriptions. The task matrix is displayed in table form to show the relationships of element functions and tasks to element personnel who contribute to or perform the identified tasks. The table also indicates whether the task is to be conducted manually or to be TOS assisted. TOS assisted has been defined to mean that TOS capabilities will be used in task performance. A task was not considered to be TOS assisted if the operator merely obtains task input data from the TOS data base simply because that is where it will be stored or stores his task output in a TOS file for the same reason.

Individual descriptions are provided for the functions or tasks appearing in the element matrix. No task descriptions are provided, however, for those tasks dealing with the setup and checkout of TOS equipment because sufficient hardware information was not available to document those procedures. Each task described is documented using either a manual or a TOS assisted task format. The manual format is in keeping with the original data collection forms and contains the task frequency estimate, criticality rating, duty positions that perform the task, inputs, outputs, coordination, and notes or comments pertaining to the task. Explanation of the various items may be found in Volume 1, Appendix B of this series. The manual task format does not include a description of how the task is or might be accomplished. The TOS assisted task format is more complete and contains section on the man/machine interface requirements and task procedures in addition to the sections contained in manual task descriptions. The man/machine interface requirements section lists the computer capabilities required to perform the task. Any of six capabilities might be listed in this section. The six capabilities are defined as follows:

- Menu selection. The capability for an operator to select the TOS function, format, or file he wishes to use through an interactive dialog with the system.
- File access. Authorization granted an operator or position by the system controller to retrieve data from the TOS system files required as inputs to the task. The system controller will enter in a system file those positions authorized to access the various TOS data files.
- File update. Authorization granted an operator or position by the system controller to make data entries in those TOS files required as task outputs. The system controller will enter in a system file those positions authorized to update the various TOS data files.
- Data transfer. The capability for an operator to transfer data from file to file, console to console, console to large screen display, file to console, and console to file.
- Graphics. The capability for an operator to specify a graphics display output for applicable items from TOS data files. It includes the capability to create display files and to select specific categories of items for display from display files.
- Attention device and threshold selection. The capability to specify alarm levels and display attention criteria.

The procedures section of TOS assisted tasks describes how the task might be accomplished using the identified TOS interface functions.

- Personnel - The personnel section of the element description provides a comparison of the doctrinal manning for manual operations to recommended manning for TOS operations. The data are presented in table format for ease of comparison. The doctrinal manning table was developed using

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the data provided in TC 101-5.¹ The recommended TOS manning was predicated on data gathered from the surveyed FORSCOM Division, TOS task identification and projection, and the 12-hour shift requirements to sustain around-the-clock operations. The remainder of the section provides a description of personnel utilization to accomplish the tasks and fulfill the requirements of the two shift operation. There are several cases where personnel have been added over and above doctrine not because of TOS but because doctrinal manning did not appear to satisfy what was considered to be adequate manning for a two shift, 24-hour operations.

- Recommendations - The recommendations provided within the element description are intended to improve the use of TOS within the element or to provide suggestions for new or modified TOS capabilities to support the element. Recommendations involving the overall system appear in Volume 1 under TOS applications.

¹TC 101-5, Control and Coordination of Division Operations, Department of the Army, April 1976.

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PERSONNEL ELEMENT (G1)

GENERAL

The G1 section, supervised by the assistant chief of staff for personnel, G1, has personnel located at the main command post, the tactical command post, and the division support area. The G1 element functions performed at the main command post were the only functions investigated by the project. Tactical command post and support area operations are not included in this element description.

The G1 normally divides his time between the main command post and the division support area. The amount of time spent in each location is dependent on the commander's desires, the tactical situation, and the G1's perception of where his presence will be most beneficial to the division. He deploys an assistant to the tactical command post as his representative to the combat service support liaison element.

The G1 element is responsible for planning, administering, and coordinating division personnel matters and requirements, and reporting personnel statuses to higher headquarters.

MISSION

The mission of the G1 element is to perform the administration, reporting, and planning necessary to support division personnel requirements.

OVERVIEW OF TOS OPERATIONS

The G1 element will share a TOS console in the division main command post tactical operations center with the G4 element. The G1 element will have limited use for TOS since most of the tasks performed in the element can be performed as efficiently and effectively without TOS assistance. However, personnel planning should make use of TOS data base information contained in the unit operations report (UOR), task organization (TO), battlefield information report (BIR), terrain (TER), and staff working files.

The G1 can initiate queries and standing requests for information (SRIs) to detect potential personnel problems to assist his planning. TOS will be used in coordinating personnel activities between the main and tactical command posts and the division support area and in coordinating unit and individual replacements within the division. For TOS to properly support the performance of these tasks, a G1 staff working file will be used to store personnel status information and the G1 element personnel at the main command post will be

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trained to use the TOS console to access the TOS data base for data useful in personnel planning. The procedures for using TOS are found in the task descriptions associated with this element.

The preparation of personnel estimates of the situation, estimates of sick and wounded rates for future operations, estimates of sick and wounded rates for prisoners of war (POWs), and planning for the evacuation and hospitalization of casualties will continue to be basically manual.

FUNCTIONS AND TASKS

Functions and tasks performed by the G1 element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 1.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 1.
G1 Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	G1	Assistant G1	Clerk Typist	Light Vehicle Driver
Performs personnel planning for the division.				
Prepares personnel estimates of the situation, participates in operational planning, and prepares the personnel portion of plans and orders.	X	X	X	X
Develops estimates of sick and wounded rates for future operations.	X	X	X	X
Develops estimates of sick and wounded rates for prisoners of war in situations causing burden on resources.	X	X	X	X
Plans for the evacuation and hospitalization of casualties.	X	X	X	X
Coordinates unit and individual replacements with the G3 element at the main command post.	(X)	(X)	X	X
Coordinates personnel activities between the main command post, the tactical command post, and the division support area.	(X)	(X)	X	X
Performs the hookup, energizing, initialization, and checkout of the TOS console.	(X)	(X)	X	X
<p>X - Manual Task (X) - TOS Assisted Task</p>				

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MANUAL TASK

ELEMENT: G1 Main

FUNCTION: Performs personnel planning for the division.

TASK: Prepares personnel estimates of the situation, participates in operational planning, and prepares the personnel portion of plans and orders.

FREQUENCY ESTIMATE: 1 per day

CRITICALITY: 2

DUTY POSITION: G1, Assistant G1, Clerk Typist, Light Vehicle Driver

INPUTS

- FM 101-10-1 (paragraph 5-9 basis for loss estimates)
- Personnel daily summary from subordinate units
- Operations and fragmentary orders
- Tactical situation
- G3 warning order

OUTPUTS

- Personnel estimates
- Periodic personnel reports

COORDINATION

Inputs: ● Subordinate unit SIs for personnel daily summary input
 ● G2 for enemy capabilities, weather, and terrain used to help determine personnel replacement flow
 ● G3 for nature and expected duration of the operation

Outputs: ● G3
 ● G4
 ● Chief of staff

NOTES

- Administration and logistics plans and orders are normally published by the G4 after close coordination with the G1 and G3.
- The G1 receives accident and injury summaries including date-time group, location, extent of injuries, disposition, equipment involved, and cause of accident or injury; personnel statistics including numbers of personnel on emergency leave, in the hospital, absent without leave, in detention, and

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killed; and emergency casualty reports when a battalion or larger unit suffers a onetime casualty incident of 20% or more of the present for duty strength.

- Unit strength charts are maintained and updated daily to show the authorized unit strength, current operating strength, and personnel losses and gains during the period.

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MANUAL TASK

ELEMENT: G1 Main

FUNCTION: Performs personnel planning for the division.

TASK: Develops estimates of sick and wounded rates for future operations.

FREQUENCY ESTIMATE: 1 per day

CRITICALITY: 2

DUTY POSITION: G1, Assistant G1, Clerk Typist, Light Vehicle Driver

INPUTS

- FM 101-10-1 (paragraph 5-9 basis for loss estimates)
- Personnel daily summary
- Operations orders
- G3 warning order
- Experience from similar operations

OUTPUTS

- Personnel situation update
- Continuing loss estimate

COORDINATION

Inputs: ● S1 at subordinate units for personnel daily summary
 ● G2 for enemy capability assessment
 ● G3 for mission statement

Outputs: ● G3
 ● G4

NOTES

- The tables in FM 101-10-I are based on World War II and Korea experience. As experience is gained in new tactical situations, it influences personnel planning.
- The personnel situation update is an unstructured evaluation of unit capability.

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MANUAL TASK

ELEMENT: G1 Main

FUNCTION: Performs personnel planning for the division.

TASK: Develops estimates of sick and wounded rates for prisoners of war in situations causing burden on resources.

FREQUENCY ESTIMATE: Very rare

CRITICALITY: 4

DUTY POSITION: G1, Assistant G1, Clerk Typist, Light Vehicle Driver

INPUTS

- Experience rate for sickness and wounds among POWs in the current theater of operations
- Division surgeon makes informal reports to G1 about illnesses and injuries among the POWs in the division and what he hears from other units

OUTPUTS

POW problems report which states numbers involved, describes the problem, and recommends solutions to the problem

COORDINATION

Inputs: Division surgeon for information about sick and wounded POWs in the division and elsewhere

Outputs: Provost Marshal who considers these rates and problems in planning the custody, evacuation, and processing of POWs

NOTES

This task is performed very infrequently as divisions normally do not have sick and wounded POWs in sufficient numbers and for periods of time long enough to burden the division resources such as food, medicine, and hospital facilities.

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MANUAL TASK

ELEMENT: G1 Main

FUNCTION: Performs personnel planning for the division.

TASK: Plans for the evacuation and hospitalization of casualties.

FREQUENCY ESTIMATE: About 1 per day

CRITICALITY: 3

DUTY POSITION: G1, Assistant G1, Clerk Typist, Light Vehicle Driver

INPUTS

- Division surgeon reports casualty data and needs to the G1
- FM 101-10-1 (paragraph 5-9 for estimates of personnel losses)
- Experience rate for casualties in current operations
- Casualty reports

OUTPUTS

- Personnel situation update
- Evacuation and hospitalization plans

COORDINATION

Inputs:

- Division surgeon
- G2

Outputs:

- Division adjutant general
- G3
- Division commander
- Chief of staff
- Division surgeon

NOTES

- The G2 would be contacted if any evidence of nuclear, biological, or gas contamination is found.
- The actual evacuation and hospitalization is handled by the division medical service.
- Some casualties with short term illness may be retained in clearing stations for 2 or 3 days if the tactical situation permits, to avoid their loss to the division.
- The G1 supervises casualty reporting, but the adjutant general operates the casualty reporting system.

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TOS ASSISTED TASK

ELEMENT: G1 Main

FUNCTION: Performs personnel planning for the division.

TASK: Coordinates unit and individual replacements with the G3 element at the main command post.

FREQUENCY ESTIMATE: Once a day

CRITICALITY: 2

DUTY POSITION: G1, Assistant G1, Clerk Typist, Light Vehicle Driver

INPUTS

- Operations overlay
- Warning order
- Adjutant general's response to request from G1 for available personnel replacements
- Personnel daily summary from subordinate unit adjutants
- Emergency personnel requisitions
- G3 recommendations of priorities for individual replacements and need for and assignment of unit replacements

COORDINATION

Inputs:

- G3 for replacement priorities and recommendations, operations overlay, and warning order
- SIs of subordinate units for personnel reports
- Adjutant general for available replacements

Outputs:

- G3
- SIs of units to notify of personnel replacements
- Division commander for personnel status data
- Adjutant general for implementing personnel replacement plans

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Data transfer
- File update

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PROCEDURES

- TOS assisted - The assistant G1 will store personnel status information in the G1 staff working file.
- TOS assisted - The assistant G1 will query the UOR, tactical dispositions (TD), BIR, and G1 staff working files to obtain the operations overlay, warning order, unit location, and personnel status of the units to gain the overview of the tactical situation needed for making personnel replacement recommendations.
- Manual - Using the casualty reports, personnel daily summaries, and emergency personnel requisitions, the assistant G1 will determine troop replacement requirements.
- Manual - The G1 will coordinate the troop replacement requirements with the G3. The G3 will establish the replacement priorities.
- Manual - The G1 will provide the replacement allocations and priorities for units and individuals to the adjutant general for implementation.
- TOS assisted - The assistant G1 will update personnel status information in the G1 staff working file.

OUTPUTS

Allocations of replacements to units

NOTES

- Warning orders alert the G1 of impending missions so he can prepare units for the missions.
- The personnel daily summary from lower units indicates replacement needs.
- Emergency personnel requisitions are submitted by the most expeditious means available to the G1 when a battalion size or larger unit is reduced to 70% of its authorized strength or when there is a need to fill critical positions. A written follow-up will be made as soon as possible.
- The adjutant general is responsible to the G1 for conducting replacement operation activities.

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TOS ASSISTED TASK

ELEMENT: G1 Main

FUNCTION: Coordinates personnel activities between the main command post, the tactical command post, and the division support area.

TASK: Coordinates personnel activities between the main command post, the tactical command post, and the division support area.

FREQUENCY ESTIMATE: As needed (very frequent)

CRITICALITY: 2

DUTY POSITION: G1, Assistant G1, Clerk Typist, Light Vehicle Driver

INPUTS

- Operations overlay
- Warning order
- Emergency personnel requisitions
- Personnel daily summary from subordinate unit adjutants
- Continuous estimate of the replacement situation
- Priority of fill established by G3

COORDINATION

- Inputs:
- G3 for operations overlay and warning order and replacement priorities
 - Division adjutant general and adjutants of subordinate units to be filled
 - S1 at subordinate units for personnel reports
- Outputs:
- Adjutant general for implementing replacement plans
 - S1 at subordinate units to report personnel replacement decisions
 - Commander for personnel status data

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Data transfer
- File update

PROCEDURES

- TOS assisted - The assistant G1 will store personnel status information in the G1 staff working file.
- TOS assisted - As personnel problems arrive, the assistant G1 at the main command post will query the TOS data base for needed information such as unit locations in the UOR file, personnel status in the G1 staff working file, and relative combat strength in the BIR file.
- Manual - Troop and unit replacement recommendations will be determined by the assistant G1 at the main command post using casualty reports, personnel daily summaries, and emergency personnel requisitions.
- Manual - The G1 will coordinate troop and unit replacement recommendations with the G3. The G3 or the division commander will establish the replacement priorities.
- Manual - Replacement allocations and priorities will be provided to the adjutant general by the G1. The adjutant general will implement the replacement actions.
- Manual - The G1 will coordinate evacuation and hospitalization plans with the division surgeon.
- TOS assisted - The assistant G1 will update personnel status information in the G1 staff working file.

OUTPUTS

Solutions to personnel problems

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PERSONNEL

TABLE 2.
G1 Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
G1	05	2260	1	05	2260	1
Assistant G1	04	2260	1	04	2260	1
Clerk typist	E4	71B30	1	E4	71B30	1
Light vehicle driver	E3	11B10	<u>1</u>	E3	11B10	<u>1</u>
Total Officers/Enlisted Men			2/2	2/2		

The G1 section in a division has elements in the division main command post, tactical command post, and the division support area. G1 elements at the tactical command post and division support area were not investigated. The manning shown above is that required for the G1 element at the main command post.

Manning for two shifts at the command post and the need to keep them as small as practical are requirements. The doctrinal and TOS recommended manning for the G1 main command post element are the same.

The G1 may travel to the division support area and to the subordinate units to look after personnel matters. He normally heads the quartering party and picks the specific location for the main command post in coordination with other senior staff officers. The assistant G1 acts as the officer-in-charge (OIC) of the G1 element at the main command post during the absence of the G1 himself. The assistant G1 at the main command post will prepare the personnel portion of briefings, coordinate with the assistant G1 at the tactical command post on personnel matters, and maintain the personnel status information. The assistant G1 at the tactical command post is the G1 representative to the combat service support liaison element at the tactical command post. He will keep the commander and his staff informed on the personnel situation and the G1 element at the main command post informed about the battle and priorities affecting personnel.

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The clerk typist will type the personnel annexes to the operations order, maintain the element files, and assist with the voice and written communications of the G1 element at the main command post.

One light vehicle driver is required to drive the G1 to the places he wishes to visit in addressing personnel needs. When he is at the main command post, he will assist in maintaining personnel status information and voice communications.

RECOMMENDATIONS

Develop a staff working file for personnel status information.

It is recommended that the G1 develop a staff working file containing units, locations of units, authorized strength, assigned strength, casualty information, and other personnel information useful for planning and reporting the personnel situation and recommending solutions to personnel problems.

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INTELLIGENCE (G2) OPERATIONS AND COLLECTION MANAGEMENT AND DISSEMINATION ELEMENTS

GENERAL

G2 operations and G2 collection management and dissemination (G2 Ops/CM&D) are often considered to be two distinct functional elements. G2 operations is responsible for coordinating the effort of all G2 elements and providing the scheduling, typing, and other administrative support for the entire G2 section. G2 CM&D coordinates the flow of all intelligence related information for the entire G2 section, including intelligence data collection planning and dissemination of incoming intelligence reports. Both elements are located in the division main command post.

In the investigated division, the two functional areas were performed primarily by the same personnel and, for that reason, are combined in this document. It may be said that the G2 himself, the two assistant G2s who act as G2 section shift officers, and the chief intelligence sergeant comprise a separate operations element, but they are assisted by CM&D personnel in performing the operations tasks of producing the intelligence annex to the operations order (OPORD), evaluating electronic warfare plans for intelligence implications, typing and distributing messages and documents, and acting as classified document custodian.

MISSION

The mission of G2 Ops/CM&D is to insure that all intelligence gathering assets are efficiently used to obtain information about the enemy and about the battlefield that will support the successful accomplishment of the division's mission.

OVERVIEW OF TOS OPERATIONS

G2 CM&D will have a dedicated console within the division main command post tactical operations center. This console will be used primarily to plan the intelligence data collection effort, maintain the status of collection assets, task collection assets, and evaluate the effectiveness of the collection effort using the TOS intelligence collection management routine. It will further be used to monitor and maintain the intelligence collection management files and the named area of interest (NAI) file. It may also be used to enter and distribute enemy situation data (ESD) file input messages taken from intelligence spot reports coming over the FM radio intelligence net from non-TOS equipped units or units whose TOS input device is not operative.

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G2 operations tasks will involve TOS primarily in using the system to keep abreast of the current situation. Preparation of the intelligence annex will require gathering of enemy situation and terrain data from TOS files. Supervising intelligence dissemination, coordinating the use of intelligence collection assets, and determining intelligence needs all require access to TOS graphics displays and file data. Preparation of formal division staff briefings requires the creation of graphics displays as well as the gathering of current TOS situation data. The G2 operations data gathering could be performed at any G2 console but is most likely to be performed where the work is being done. For example, retrieving information on intelligence dissemination and collection asset utilization would be done at the CM&D console and retrieving current situation information for intelligence annex or briefing preparation and for determining intelligence needs would be done at the analysis and production (A&P) element consoles.

Some tasks performed by Ops/CM&D will remain essentially manual operations even after TOS is implemented. The administrative functions of maintaining the classified document log, maintaining personnel and equipment schedules, and maintaining command post access rosters may lend themselves to TOS file storage, but TOS is intended to support tactical operations and strictly administrative functions would consume needed storage space and computing time. The intelligence annex will still be typed and distributed manually due to its size and essentially "free text" nature. Larger documents and studies will continue to come via courier or teletype and require manual distribution. Spot reports that still come in over the intelligence radio net will require copying although they eventually will be entered in the appropriate TOS file, either by CM&D or by A&P personnel. Other operations tasks require face to face coordination and will not be accomplished via TOS. These tasks include coordinating with the G3 staff on such matters as operations security, electronic warfare plans, and emphasizing the importance of critical intelligence messages and products. There are also certain intelligence collection management tasks that require making determinations that will not be directly assisted by TOS. These tasks are ones performed in the early stages of collection planning. They include developing the mission essential elements of information (EEI) and other information requirements (OIR), establishing intelligence indicators, and determining the priority and reporting time limits for intelligence data collection.

Some tasks that are currently performed by Ops/CM&D personnel will no longer be required under TOS. The preparation of intelligence summary (INTSUM) reports, enemy front line trace reports, and situation reports (SITREPs) should no longer be required when TOS is implemented. The information used in creating these reports will be resident in TOS files and available to any authorized TOS user. Also, it is recommended throughout this document that A&P personnel maintain current intelligence summary data in a TOS staff working file; this, in itself, might replace the three reports. Another task that should no longer be required under TOS is maintaining an intelligence data collection worksheet.

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The purpose of this worksheet was to record which agencies were assigned which tasks and to give a general idea of their performance. TOS will contain report outputs that provide this information.

FUNCTIONS AND TASKS

Functions and tasks performed by the G2 Ops/CM&D element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 3.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 3.
G2 Operations and Collection Management and Dissemination Elements

FUNCTIONS AND TASKS	G2	Assistant G2	CM&D Section Chief	Intell Sergeant (chief)
Provides tactical intelligence and information for future operations.				
Produces the intelligence annex to the division OPLAN or OPORD.		(X)	(X)	
Coordinates G2 portion of OPSEC with the CI control element and coordinates OPSEC planning information and intelligence with the G3 staff.		X		
Evaluates planned electronic warfare (EW) operations for intelligence implications to include requirements for electronic support measures (ESM) and EW intelligence support.		X	X	
Provides administrative support for the division intelligence organization.				
Types and distributes the intelligence annex.		X	X	
Maintains the classified document log.				
Provides personnel, equipment, and materiel management for the division intelligence staff organization.				
Maintains the division main and tactical command post access rosters.				

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ement Positions, Functions, and Tasks

Intelligence Sergeant (Chief)	Intelligence Sergeant (CM&D)	Secretary- Steno	Intelligence Clerk
-------------------------------------	------------------------------------	---------------------	-----------------------

X

X

X

X

X

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TABLE 3. (Continued)
G2 Operations and Collection Management and Dissemination Effort

FUNCTIONS AND TASKS	G2	Assistant G2	CM&D Section Chief	Int Sec (Chief)
Processes, requests, and distributes intelligence and related items.				
Processes and distributes intelligence documents and messages received over the intelligence FM radio net or via courier, field phone, or teletype.			X	
Requests, receives, and distributes special studies required for operational planning.			X	
Creates briefing material and briefs the commander and division staff on the current intelligence situation.	(X)	(X)		
Supervises the G2 staff collection and reporting effort.				
Coordinates utilization of assets with the G2 staff elements.	(X)	(X)		
Supervises the dissemination of intelligence and information.	(X)	(X)		
Provides the interface with the G3, emphasizing importance of critical intelligence to operations personnel.	X	X	X	
Manages and coordinates the overall collection effort throughout the division.				
Determines intelligence needs relative to mission objectives and plans and corps directives.		X	X	

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Element Positions, Functions, and Tasks

Intelligence Sergeant (Chief)	Intelligence Sergeant (CM&D)	Secretary- Steno	Intelligence Clerk
-------------------------------------	------------------------------------	---------------------	-----------------------

X

x

X

X

x

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TABLE 3. (Continued)
G2 Operations and Collection Management and Dissemination

FUNCTIONS AND TASKS	G2	Assistant G2	CM&D : Section Chief
Determines the relative priority of intelligence needs.	X	X	X
Determines the enemy activities and characteristics which would indicate their probable courses of action.	X	X	X
Determines time limits for responding to collection requests.		X	X
Assigns collection tasks to intelligence organizations.			X
Resolves conflicts between intelligence data collection tasking assignments.			X
Monitors the status of collection assets.			X
Monitors the collection effort.			X
Manages the named area of interest (NAI) file.			X
Coordinates the TOS ICM files access and security matters with the SYSCON.			X
Performs the hookup, energizing, initialization, and checkout of the TOS console.			
X - Manual Task			
X - TOS Assisted Task			

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ued)
ion. Element Positions, Functions, and Tasks

Intelligence Sergeant (chief)	Intelligence Sergeant (CM&D)	Secretary- Steno	Intelligence Clerk
-------------------------------------	------------------------------------	---------------------	-----------------------

X

(X)

(X)

(X)

(X)

(X)

X

X

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TOS ASSISTED TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Provides tactical intelligence and information for future operations.

TASK: Produces the intelligence annex to the division OPLAN or OPORD.

FREQUENCY ESTIMATE: When the mission changes, less than once a day

CRITICALITY: 1

DUTY POSITION: Assistant G2, CM&D Section Chief

INPUTS

General Information Sources

- Basic division OPLAN for general G2 operating procedures
- Last published division intelligence annex
- Division mission for the G3's concept of operations briefing
- Corps intelligence annex for basic data used in all paragraphs of the division intelligence annex
- Any intelligence summary data maintained by the A&P element in a TOS staff working file
- Information gathered from direct communications with other G2 elements and collection agencies

Terrain Analysis Sources

- Summarized results of the A&P element's intelligence preparation of the battlefield
- TOS terrain file
- Terrain maps
- Documents on enemy doctrine such as Defense Intelligence Agency documents
- Specific information from corps and division engineers not already gathered by A&P or placed in the TOS TER file
- ESD file messages that contain terrain data

Weather Analysis Sources

- Present conditions and forecast taken from a TOS staff working file containing weather data, if such a file is maintained
- Engineer's reports on soil conditions and trafficability taken from the TER file or obtained directly from corps and division engineers
- Medical reports of effects of weather on personnel performance

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Enemy Situation Analysis Sources

- Summarized results of the A&P element's analysis of the enemy situation
- Existing order of battle data taken from the TOS enemy order of battle (EOB) file
- ESD file messages dealing with the enemy situation
- A&P element large screen display containing a graphic representation of the currently known enemy situation
- Documents on enemy doctrine

Other Sections of Annex Provided by Other G2 Elements

- Operations security section from the counterintelligence (CI) control element
- Signal security section from the signal security (SIGSEC) element
- Reconnaissance and surveillance section from the reconnaissance and surveillance (R&S) element

COORDINATION

- Inputs:
- Division G3 for the mission statement
 - Corps G2 for the corps intelligence annex and intelligence documents
 - Staff weather officer for forecast weather conditions during the mission time period
 - Assistant division engineer for specific terrain data
 - Division medical officer for effects of weather on personnel
 - Division intelligence collection and analysis assets such as Army Security Agency (ASA), A&P, R&S, CI control, interrogation of prisoners of war (IPW), and stand off target acquisition system (SOTAS) for their inputs and for verbal information
 - Division CI control element chief for operations security section of the intelligence annex
 - Division R&S element chief for reconnaissance and surveillance section of the intelligence annex

Outputs: CM&D secretary-steno or intelligence clerk is given the handwritten annex for typing

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- Data transfer
- Graphics

PROCEDURES

- Manual - G2 operations personnel will attend the mission briefing where division G3 personnel explain the mission.
- Manual - Assistant G2 will brief elements that contribute special portions of the annex. These elements include CI control, SIGSEC, and R&S. He will explain the mission and give them the suspense time for completing their sections. He will monitor their progress and provide augmentation if needed.
- Manual - The division basic OPLAN will be referenced for standard G2 tactical operating procedures, if necessary.
- Manual - The intelligence annex from the corps OPORD for this mission, if available, will be analyzed and used as the basis for the division intelligence annex. Information not applying to the division will be deleted and specific division detail will be added where required.
- TOS assisted - The TOS staff working file containing intelligence summary information will be queried to obtain hardcopy printout of current summary data concerning the area of operation and the enemy situation. A suggested format for this file is contained in the A&P element description.
- TOS assisted - The results of the A&P element's analysis of the area of operation will be discussed with the A&P chief in terms of likely avenues of approach, key terrain, observation and fields of fire, and general terrain effects on enemy and friendly courses of action. The results will be discussed using the TOS large screen display and data retrieved from the TER, EOB, and ESD files. Voids in knowledge of the terrain will also be determined and methods for gathering the information will be discussed.
- Manual - The assistant division engineer will be tasked for specific terrain information not already in the TER file.
- TOS assisted - Weather forecast data for the mission time frame might be obtainable by querying a staff working file containing weather data. The staff weather officer will be tasked for any desired weather data not contained in TOS files.
- Manual - The medical officer will be tasked for information on the effects of forecasted weather on personnel. Clothing requirements and expected effects of sustained marches are examples of the information that might be required of the medical officer.
- Manual - The section of the intelligence annex concerning the analysis of the area of operation will be handwritten and contain a summary of the terrain, obstacle, and weather data gathered above.
- TOS assisted - The results of the A&P element's analysis of the enemy situation will be discussed with the A&P chief in terms of the enemy's order of battle, current activities, and possible courses of action. The results will be discussed using the TOS large screen display and calling up data from the EOB and ESD files to show the current enemy situation and possible future activities. Documents on enemy doctrine will be referenced to support derived conclusions. An enemy front line trace will be hardcopied from the EOB file. Voids in our knowledge of the enemy will also be discussed as well as methods for gathering the missing information.

- Manual - The section of the intelligence annex concerning the enemy situation will be handwritten and contain a summary paragraph of the situation, the enemy front line trace, the enemy unit identifications and locations as known, a statement of which units are committed and which are reinforcing, a list of recent and present significant enemy activities, estimated enemy peculiarities and weaknesses, and conclusions about enemy intentions and probable objectives. The derivation of this information is described in the A&P element section of this document.
- Manual - The information voids determined during the discussions of the terrain and enemy situation will be combined with information coming from the division commander and the G3. By comparing these information requirements with mission requirements, G2 personnel will determine which requirements are essential to fulfilling the mission and which are merely helpful. These EEI and OIR will be included as questions in a separate section of the intelligence annex. Another section will contain statements of requests to higher, adjacent, and cooperative units for standard order of battle information. Details on the identification of information needs are contained in a later task within this element description.
- Manual - The assistant G2 or CM&D section chief will receive the handwritten operations security, signal security, and reconnaissance and surveillance portions of the intelligence annex from the responsible officers. He will edit these sections and integrate them into the annex. He will compare the reconnaissance and surveillance requirements with the requirements developed by the G3 air officer to assure that there are no conflicts in aircraft and airspace requirements.
- Manual - The entire handwritten annex will be given to the CM&D secretary-steno for typing.

OUTPUT

The TOS outputs of this task will include queries and SRIs against TER, EOB, and ESD files; hardcopy and console digital display of TER, EOB, and ESD file contents; and large screen and console graphics display of TER, EOB, and ESD file contents. The end product is a handwritten draft of the division intelligence annex.

NOTES

- The above procedures describe the development of a complete intelligence annex using division-generated information. The development of complete annexes may not be possible in the field due to time constraints. In this case, the corps intelligence annex would be extensively copied. The last division intelligence annex may also be extensively used if the battlefield is the same and the enemy situation is not appreciably different.

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- TOS would be used to provide data that are analyzed and summarized in the intelligence annex but would not be used to compose or store the annex itself. The TOS analysis aids of query, SRI, correlation, and dynamic graphics display of stored data should increase the rapidity and validity with which intelligence information can be analyzed and conclusions drawn. No TOS file is currently envisioned to contain the completed intelligence annex.
- A&P personnel will do most of the data base manipulation and analysis that results in the terrain, enemy situation, and EEI and OIR sections of the intelligence annex. Under the envisioned TOS configuration, the greatest computing power, in terms of TOS equipment, is resident in the A&P element. The officer responsible for developing the annex will probably do most of this work in the all source intelligence center van where A&P will be located.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Provides tactical intelligence and information for future operations.

TASK: Coordinates G2 portion of operations security with the CI control element and coordinates operations security planning information and intelligence with the G3 staff.

FREQUENCY ESTIMATE: Once per duty shift

CRITICALITY: 2

DUTY POSITION: Assistant G2

INPUTS

The assistant G2 will have verbal discussions with CI control personnel to determine how well we are doing in communications security, electronic security, camouflage, light discipline, personnel security, and other "indicators" that might give our location or intent away to the enemy. He will ask the CI control personnel for suggestions on improving operations security and how best to use "indicators" for deception. He will also discuss proposed deception plans with CI control personnel to get their opinion.

OUTPUTS

The assistant G2 informs the G3 of operations security problems and recommends solutions. He makes suggestions for the G3's deception plan.

COORDINATION

Inputs: CI control personnel

Outputs: G3

NOTES

This task requires the flexibility of face to face coordination and thus does not qualify for TOS interaction.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Provides tactical intelligence and information for future operations.

TASK: Evaluates planned electronic warfare (EW) operations for intelligence implications to include requirements for electronic support measures (ESM) and EW intelligence support.

FREQUENCY ESTIMATE: 4 per duty shift

CRITICALITY: 2

DUTY POSITION: Assistant G2, CM&D Section Chief

INPUTS

- Written EW annex to the OPORD. This, however, is normally too general to provide the details necessary.
- Verbal statement from the EW officer giving his intent to jam a specific enemy unit or net

OUTPUTS

Verbal statement to the EW officer as to how the jamming will affect G2 operations and suggestions as to how they might improve the effectiveness of their jamming.

COORDINATION

Inputs: EW officer

Outputs: EW officer

NOTES

- The EW officer works for the G3 but is located in the all source intelligence center and thus works closely with the G2 section.
- The evaluation of proposed EW operations would not appear to require TOS data base information. The basic question is whether signal intelligence personnel are gathering valuable information from enemy radio nets that will be affected by the jamming. The data source of signal intelligence inputs to the ESD file will have been removed as part of the "cover story" and thus the evaluating officer will have to go direct to Army Security Agency personnel to determine if the frequencies to be jammed are providing valuable information.

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- Suggestions for improving jamming effectiveness may be a by-product of intelligence analysis involving TOS data as described in the A&P element description.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Provides administrative support for the division intelligence organization.

TASK: Types and distributes the intelligence annex.

FREQUENCY ESTIMATE: Less than 1 a day

CRITICALITY: 4

DUTY POSITION: Assistant G2 or CM&D Section Chief, Secretary-Steno,
Intelligence Clerk

INPUTS

A handwritten copy of an intelligence annex given to one of the enlisted personnel for typing

OUTPUTS

Typewritten, approved, and delivered intelligence annex

COORDINATION

Inputs: Assistant G2 or CM&D section chief

Outputs: Division G3

NOTES

- This task was assigned a low criticality. The interviewee felt that administrative errors in handling the annex would be corrected before they create a problem.
- The typist types the intelligence annex and gives it to the officer for review. Necessary corrections are made and the officer either gives it to the intelligence clerk for delivery or handcarries it himself if he needs to discuss any aspect of the annex with the G3.
- TOS, as currently envisioned, will not contain a file for storing and distributing the intelligence annex due to its size and variability. This task does not qualify for TOS interaction.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Provides administrative support for the division intelligence organization.

TASK: Maintains the classified document log.

FREQUENCY ESTIMATE: 2 per duty shift

CRITICALITY: 5

DUTY POSITION: Intelligence Sergeant (CM&D)

INPUTS

Incoming Document: Document with completed receipt

Outgoing Document: Blank classified document receipt

OUTPUTS

Incoming Document: ● Document given to requesting individual
● Receipt filed in classified document log

Outgoing Document: ● Completed receipt with document number, date, subject, number of classified pages, and who it goes to
● Document with copy of receipt sent to requester
● Copy of receipt filed in classified document log

COORDINATION

Incoming Document: ● Inputs: Usually the adjutant general section, occasionally the G3 section
● Outputs: None

Outgoing Document: ● Inputs: Requester
● Outputs: Requester

NOTES

- Receipts are destroyed when outgoing documents are returned.
- This is strictly an administrative function with low criticality in a tactical situation and does not qualify for TOS interaction. The control of classified data within TOS is the responsibility of the system controller and data base file managers.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Provides administrative support for the division intelligence organization.

TASK: Provides personnel, equipment, and materiel management for the division intelligence staff organization.

FREQUENCY ESTIMATE: One half of the chief intelligence sergeant's time

CRITICALITY: 3

DUTY POSITION: Intelligence Sergeant (chief)

INPUTS

Personnel Management:

- Enlisted personnel roster
- Manning needs from G2, assistant G2, or CM&D section chief

Equipment and Materiel Management:

- The field standing operating procedure tells what equipment and materiel are needed in the field tactical operations center
- Verbal notification of equipment failure

OUTPUTS

Personnel Management:

- Written schedule showing names and shift assignments
- Changes are made via verbal communications with the individuals affected

Equipment and Materiel Management:

- A fully equipped unit
- Requests for equipment and materiel are coordinated with the supply section prior to deployment

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COORDINATION

Personnel Management:

Inputs: G2, assistant G2, CM&D section chief

Outputs: NCOICs of G2 elements in the main and tactical command posts, enlisted personnel directly assigned to G2 operations and CM&D

Equipment and Materiel Management:

Inputs: None, initiated by notification of deployment.

Outputs: Supply section while still in garrison, headquarters company commandant when in the field

NOTES

- The chief intelligence sergeant schedules enlisted personnel for both the main and tactical command posts.
- The chief intelligence sergeant has the CM&D assistant noncommissioned officer in charge (NCOIC) inventory and operationally check out equipment prior to deployment. If gear is missing or faulty, the chief intelligence sergeant coordinates with supply personnel for replacements.
- This task does not qualify for TOS interaction. Personnel schedules and equipment inventories could be maintained in a TOS staff working file. However, TOS is a tactical system and automation of strictly administrative functions would violate its objective and reduce the storage space and machine time available for more critical tactical operations.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Provides administrative support for the division intelligence organization.

TASK: Maintains the division main and tactical command post access rosters.

FREQUENCY ESTIMATE: 12 per duty shift

CRITICALITY: 3

DUTY POSITION: Intelligence sergeant (chief)

INPUTS

Units submit personnel information on individuals to be added to the access rosters. Information includes name, social security number, clearance, duty position, and identification number.

OUTPUTS

- Request given to CI element for approval
- Name added to roster
- G2 or S2 of unit involved is notified if access not granted
- Updated roster given to the military police who control command post access

COORDINATION

Inputs: Unit G2 or S2

Outputs: CI element, unit G2 or S2, military police

NOTES

- The interviewed CI officer said they cannot conduct clearance investigations in the field. The only checks they could make are against their field files.
- This is another administrative task which, though capable of TOS interaction, does not qualify because TOS is intended for tactical operations.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Processes, requests, and distributes intelligence and related items.

TASK: Processes and distributes intelligence documents and messages received over the intelligence FM radio net or via courier, field phone, or teletype.

FREQUENCY ESTIMATE: 16 per day. See first entry under notes.

CRITICALITY: 2

DUTY POSITION: CM&D Section Chief, Intelligence Sergeant (CM&D), Secretary-Steno, Intelligence Clerk

INPUTS

- Document or message to be distributed
- Chart that shows distribution by subject matter

OUTPUTS

- Distribution written on document or message
- Copies of document or message distributed by the intelligence clerk or the adjutant general section

COORDINATION

- Inputs:
- Brigade S2s for patrol reports and intelligence annexes
 - CI control for agent reports
 - IPW for interrogation reports
 - Corps G2 for their intelligence annex

Outputs: Any division element, subordinate unit, or higher headquarters on distribution for the documents

NOTES

- It is difficult to estimate the frequency with which intelligence information will be received via radio, phone, teletype, and courier when TOS is fully implemented. All of the direct G2 sources including corps, brigades, tactical command post, armored cavalry squadron, ASA, CI, IPW, R&S, and SOTAS appear to have access to a TOS console. Also, INTSUMs, which required courier or teletype transmission, will not be used under TOS. The frequency estimate

of 16 per day is for complete patrol reports, agent reports, interrogation reports, and OPORDs that are too voluminous to be sent via TOS. This frequency assumes that all TOS consoles are operational and are being fully utilized.

- The secretary-steno copies messages coming in over the radio. The intelligence clerk picks up messages coming over the teletype. Messages coming via courier would normally go directly to the CM&D section chief or the CM&D intelligence sergeant.
- The CM&D section chief or CM&D intelligence sergeant reads the message and determines the subject matter. He may use a chart to determine distribution by subject matter or he may know the proper distribution from experience.
- If the message is not appropriate for TOS entry, the officer or sergeant writes the distribution on the document and hands it to the intelligence sergeant who enters it in the journal and makes copies as required. Dissemination within the main command post is made by CM&D personnel. Dissemination external to the main command post is made by the adjutant general element.
- If the message is a spot report, the officer or sergeant may either enter it at the CM&D console as an ESD input message or, if the console is otherwise occupied, have the intelligence clerk deliver it to A&P. A&P then would enter it as an ESD input message.
- Under the manual configuration, this is the largest task performed by CM&D in terms of both time and manpower requirements. Under TOS, the message originator will set the distribution for his TOS input message and any recipient can add to the original distribution and retransmit. Also, the TOS SRI function provides further assurances of proper distribution. As the bulk of the intelligence traffic will be via TOS (e.g., intelligence spot reports which comprise the great majority of intelligence communications will be replaced by ESD file input messages), it is estimated that over 95% of the work load assumed under this task in a manual operation will not be required under TOS. This estimate is based on the assumption of a fully operational TOS being fully utilized with the console configuration described in this document.
- G2 journal entry of received TOS messages should not be required. Hardcopy of all TOS messages received can be kept by A&P as a permanent record. Also, the "indexing" function served by a journal is replaced by the ability to query the data base for messages having specific qualities. Thus, the journal maintenance aspect of this task should be reduced by over 95% as well.
- Under the manual configuration, Ops/CM&D maintain their own situation map separate from the one maintained by A&P. This is required to provide a picture of the enemy situation that is readily available to other division staff elements. The A&P element, which has the primary responsibility for maintaining the enemy situation, is located in the all source intelligence center (ASIC) van which is separated from the rest of the tactical operations center and requires special intelligence clearance to gain access. Under the present TOS configuration, CM&D is not provided with a large screen display; however, some method of graphically displaying the enemy situation in the

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main tactical operations center area via TOS is considered essential and no consideration of manual map posting was given in this element description. A full explanation of the situation and recommended solutions is contained in the Ops/CM&D recommendations section.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Processes, requests, and distributes intelligence and related items.

TASK: Requests, receives, and distributes special studies required for operational planning.

FREQUENCY ESTIMATE: Rare

CRITICALITY: 4

DUTY POSITION: CM&D Section Chief, Secretary-Steno, Intelligence Clerk

INPUTS

- Initiated by need to know something about the enemy or the terrain that cannot be readily obtained through organic sources
- Request submitted in person, over the radio, or through special security office channels stating information needed and the time limits for the reply

OUTPUTS

- Receipt of national level agency publications from corps or special security office via courier
- Receipt of written special study report from corps via teletype or courier
- Receipt of verbal or written special studies report from the division engineers
- Receipt of publication or verbal or written report from the division air liaison officer

COORDINATION

- Corps G2 for national agency publications and special studies
- Division special security element for certain classified national agency publications
- Division engineers for special studies such as enemy engineering equipment or bridge construction details
- Division air liaison officer for publications and reports on capabilities of the enemy air force

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NOTES

- Requests like these might be made if there is a change in the division's mission or area of interest.
- This task covers just those requests to agencies which are not TOS equipped or requests requiring more detail than can be contained in a TOS intelligence collection requirement message. It also covers responses that cannot be sent via TOS because it is not the most efficient means, they are too voluminous for TOS transmittal, or the data cannot be placed in a TOS file. The handling of TOS intelligence collection requirement messages is described later in this section.

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TOS ASSISTED TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Processes, requests, and distributes intelligence and related items.

TASK: Creates briefing material and briefs the commander and division staff on the current intelligence situation.

FREQUENCY ESTIMATE: 2 per day

CRITICALITY: 2

DUTY POSITION: G2, Assistant G2

INPUTS

- Division OPORD intelligence annex
- Current enemy situation as depicted on the TOS large screen graphics display
- ESD file for specific intelligence messages
- EOB file for current enemy unit identifications, compositions, locations, and strengths
- TOS current intelligence summary data, if kept
- Current and forecasted weather data from a TOS staff working file or directly from the staff weather officer
- Element summaries from A&P, CM&D, CI control, SIGSEC, ASA tactical support element (ATSE), R&S, and the tactical command post G2 element

COORDINATION

- Inputs:
- A&P element personnel for ESD and EOB file data and TOS summary data as well as discussions of events and conclusions
 - Staff weather officer for weather data
 - Other G2 element chiefs for element summaries

- Outputs:
- A&P personnel for new graphics displays
 - Division commander, division staff, and other briefing attendees

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Data transfer
- Graphics

PROCEDURES

- TOS assisted - If a current summary of the intelligence situation is kept in TOS, it can be hardcopied and used as the basis for the briefing. If kept, it should contain an up-to-date summary of terrain conditions, weather, enemy order of battle, recent events, and conclusions concerning probable enemy courses of action and avenues of approach.
- TOS assisted - A weather display file might be created by transferring weather forecast data from its normal TOS file location to a graphics display file and adding information such as light data and weather effects derived from discussions with the staff weather officer.
- TOS assisted - A terrain display file might be created by transferring TER file entries such as key terrain areas, obstacles, minefields, and roads to a graphics display file and adding information such as avenues of approach indicators. The basic display should not require development more than once per mission with features added as they are identified.
- TOS assisted - The ESD file could be queried to retrieve and hardcopy input messages that report terrain conditions. The briefing officer could take notes from these messages.
- Manual - The briefing officer will gather details and take notes about the terrain features from discussions with the division engineers, R&S, A&P, and forward unit personnel and from the division OPORD intelligence annex. He might gather information and take notes about local population characteristics such as politics, transportation, loyalties, and manpower from discussions with division CI and G5 personnel and from the division OPORD intelligence annex.
- TOS assisted - A basic enemy situation overlay display file may be created by transferring the currently known enemy unit locations and identifications from the EOB file to a graphics display file. Alphanumeric data that show unlocated units, unit combat effectiveness and any other desired information might be added to this display file.
- TOS assisted - Overlays of recent enemy activities may be created by querying the ESD file for all recently reported events of some specific type and transferring them to a graphics display file. Separate overlays could be created for such events as enemy nuclear and chemical activities, enemy troop movements, and enemy data collection activities. The briefing officer will gather details and take notes about these events and the conclusions derived from them from discussions with A&P, CI, ATSE, and lower echelon personnel.
- TOS assisted - The basic conclusions concerning probable enemy courses of action and vulnerabilities, derived primarily by A&P, might be entered as alphanumeric data in a separate display file.
- Manual - The briefing officer will gather element activity summaries from CM&D, ATSE, R&S, CI control, and SIGSEC elements. These summaries will contain such information as intelligence collection tasking effectiveness, EW activity undertaken and its effectiveness, number of air reconnaissance sorties available, and number of friendly communications circuits monitored and the results of monitoring. This information could be placed in display

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files as alphanumeric data, but because of the limited number of these files available. it is recommended that this information be briefed from hand-written notes or charts.

- Manual - A list of the display file titles in the desired order of presentation will be given to the operator of the G3 large screen display device. It is recommended that the G3 device be used for the briefing because its location provides more space than the A&P display and it is not in a special intelligence area. The briefing might also be conducted at the tactical command post using the large screen display device at that location.
- TOS assisted - The responsible officer will present the intelligence portion of the briefing using the previously prepared TOS displays and notes.
- TOS assisted - After the briefing, all of the display files except the terrain display would probably be deleted because the other data are perishable and the display file space will be required for other tasks.

OUTPUTS

The outputs of this task will include TOS queries, hardcopy of the responses to TOS queries, TOS display files, and handwritten or typed briefing notes.

NOTES

- The content of the briefing material described above is a suggested one that follows the outline of an intelligence estimate. The actual content of any division's G2 briefing will depend on command and G2 preferences and the tactical situation.
- Although the G2 or assistant G2 are usually responsible for giving the briefing, the currently envisioned TOS configuration will require extensive use of A&P personnel in retrieving file data and creating graphics display files.
- The use of TOS graphics displays in the commander's briefing is recommended for the following reasons. Much of the data required will be TOS resident. TOS permits relatively safe storage of preformatted displays. The TOS graphics capabilities of category selection and direct creation of displays from permanent file data give the briefer dynamic control of displays. Proper use of the TOS large screen graphics capability will permit the removal of most permanent acetate display boards from the tactical operations center.
- If TOS staff working files are used to store summaries of the current situation in all division functional areas, twice a day briefings may not be necessary. The original mission briefing would be required for coordination and discussion, but the number of subsequent briefings during mission conduct might be reduced. Any level of command needing up-to-date information on any aspect of the division situation could retrieve the applicable records from TOS. The maintenance of intelligence summary data in TOS is explained in the A&P element description.

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TOS ASSISTED TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Supervises the G2 staff collection and reporting effort.

TASK: Coordinates utilization of assets with the G2 staff elements.

FREQUENCY ESTIMATE: Each element is checked at least every 1½ hours

CRITICALITY: 2

DUTY POSITION: G2, Assistant G2

INPUTS

- Verbal briefings from the R&S officer, CM&D chief, A&P chief, CI control chief, SIGSEC chief, and ATSE chief
- The summary report from the TOS intelligence collection management (ICM) software routine
- TOS large screen graphics and console graphics displays of the current situation
- Routine hardcopy output of all incoming TOS ESD messages
- Hardcopy responses to TOS queries of the SRI and EOB files to be used with the ICM summary report to determine if any necessary intelligence data are not being collected or properly distributed
- Current intelligence summary data from the appropriate TOS file, if kept
- Information picked up by listening to what is going on in the various G2 elements
- Existing EEI and OIR and mission objectives as well as a personal knowledge of the commander's intelligence data needs

COORDINATION

- Inputs:
- R&S, CM&D, A&P, CI control, SIGSEC, and ATSE chiefs for element activity information
 - A&P and CM&D TOS console operators to obtain TOS outputs

Outputs: Any G2 element chief

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics

PROCEDURES

- TOS assisted - The G2 or assistant G2 will periodically request retrieval and hardcopy of intelligence summary data if such data are maintained in a TOS file. This will give him an overview of what is known about the enemy regardless of his location as long as he has access to a TOS console.
- TOS assisted - The G2 or assistant G2 will periodically visit the CM&D element to determine the status of intelligence data collection. He will discuss the situation with the CM&D section chief. He might request display or hardcopy of the contents of the intelligence collection agency (ICA) file to determine the status, present utilization, and efficiency of the division collection assets. He might request a hardcopy of the TOS tasking summary report to review the total outstanding tasking requests and the number of responses received on each. He might request display or hardcopy of a more detailed summary for any particular tasking request. He might request a hardcopy of SRI file contents to determine the types of information being sought by the G2 elements. He might verbally request that the CM&D section chief add a new tasking request or change an existing one based on his knowledge of the situation and the commander's needs. A detailed discussion of the TOS intelligence data collection management capabilities is contained in later Ops/CM&D task descriptions.
- TOS assisted - The G2 or assistant G2 will periodically visit the A&P element to determine their current analysis priorities. He will discuss their activities and conclusions with the A&P officer while viewing the current situation on the TOS large screen or console display. He might thumb through the hardcopy of ESD file input messages to determine the general types and quality of intelligence information being received. He might request display or hardcopy of the EOB file contents to help investigate voids in our knowledge of the enemy order of battle. He might verbally request that the A&P officer concentrate the analysis effort in some different area or that they request specific additional data collection.
- TOS assisted - The G2 or assistant G2 will periodically visit the R&S, ATSE, CI control, and SIGSEC elements to discuss their activities. They might retrieve TOS data, such as ESD file messages that relate to a specific subject, to help explain the situation. The G2 or assistant G2 might verbally request that an element chief redirect his effort based on the current situation and the commander's needs.

OUTPUTS

The output of this task is verbal tasking given to G2 elements as required to redirect their efforts to concentrate on pertinent data.

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NOTES

- The purpose of this task is to maximize the use of all collection assets and to insure that G2 elements are concentrating their efforts on data that are critical to the mission.
- The primary EEI is usually "where will the main attack come from and when will it occur?" If the collection effort can be concentrated on this, things will usually run smoothly.
- It is not envisioned that the G2 and assistant G2s will themselves operate TOS consoles. However, they will have to be thoroughly familiar with the purpose, origin, and content of the TOS files that affect their operation in order to intelligently use TOS as an aid in performing tasks like this one.

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TOS ASSISTED TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Supervises the G2 staff collection and reporting effort.

TASK: Supervises the dissemination of intelligence and information.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 2

DUTY POSITION: G2, Assistant G2

INPUTS

- ASIC-generated ESD input messages for review
- CI control-generated ESD input messages for review
- CI agent reports for review
- SIGSEC-generated spot reports for review
- Hardcopy of ESD messages to review their distribution
- Hardcopy of SRI file contents to see who has requests out for various types of information
- G2 journal maintained by CM&D
- Current intelligence situation as displayed on the A&P large screen display used to help determine what data are critical to the other division elements and higher and lower echelons

COORDINATION

Inputs: ● A&P element personnel for their ESD input messages and for A&P large screen graphics displays
 ● CI control element personnel for CI ESD input messages and agent reports
 ● SIGSEC element personnel for SIGSEC spot reports

Outputs: A&P, CI control, and SIGSEC element personnel

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics

PROCEDURES

- TOS assisted - The A&P chief or A&P shift officer will generate ESD messages reporting the conclusions derived from their analyses. The A&P officer will decide if the information in the message should be approved by the G2 or assistant G2 before it is transmitted. If so, the message might be composed, hardcopied, and placed in the console receive queue while the hardcopy is carried to the G2 for approval, if the G2 is elsewhere in the main command post. If the G2 is at some other command post, the contents of the message might be entered in a relay message along with the statement that it is for G2 approval. This relay message could then be sent to the most appropriate console in that command post. A relay message containing the information as altered by the G2 could be transmitted back to A&P. If the G2 is in the all source intelligence center van, he can review the composed ESD message on the console display before it is transmitted. After approval, the ESD message will be recalled from the receive queue, if necessary, edited as required, and transmitted to the normal distributees. The same procedures would be required for ESD messages generated as a result of CI analysis.
- Manual - The G2 or assistant G2 will be handed a typed or handwritten copy of CI agent reports and signal security reports. He will make any desired changes and return it to the element for release.
- TOS assisted - If intelligence summary information is to be kept in TOS, certain portions of this summary may require G2 approval before file entry. This could be handled as previously described for ESD messages.
- TOS assisted - The G2 or assistant G2 will determine if intelligence information is being properly distributed during his element visits. While studying the SRI file contents, he will determine if his own elements are asking for the right information. He will look at the G2 journal maintained by CM&D to see who is getting messages received via non-TOS communications. While looking through the hardcopy of ESD messages, he will generally check the distributions to see if the right people are receiving relevant intelligence data. While discussing the current situation with the A&P chief, he will ask who has been sent various pieces of information. He may direct that certain elements or echelons be added to the distribution for specific types of messages.

OUTPUTS

The outputs of this task are reviewed, edited, and approved TOS or written messages generated by G2 elements. Also output are verbal directions to staff elements to change message distributions.

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NOTES

The number of division intelligence products requiring G2 release approval should be greatly reduced under TOS. INTSUMs and SITREPs should not be required under TOS as the information normally contained in these intelligence outputs will be directly retrievable from TOS files. G2 approval of ESD target messages should not be required as the reliability rating for these messages will be contained in the transmitted messages. It is hoped that only the more critical A&P ESD outputs and those based on the least empirical evidence will require G2 review. The time advantages gained by using TOS in analyzing data might be lost in awaiting G2 approval for releasing the derived conclusions. It is recommended that the A&P chief be permitted to determine if an ASIC output needs to be approved by the G2 prior to its release. Most intelligence summary inputs contained in TOS should not require G2 approval as they will be summarizing the current situation or restating conclusions previously released in ESD messages.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Supervises the G2 staff collection and reporting effort.

TASK: Provides the interface with the G3, emphasizing the importance of critical intelligence to operations personnel.

FREQUENCY ESTIMATE: Every 5 to 10 minutes during periods of heavy activity

CRITICALITY: 2

DUTY POSITION: G2, Assistant G2, CM&D Section Chief

INPUTS

Intelligence messages and reports that appear to be critical to the mission

OUTPUTS

Informal briefing of the G3 duty officer to explain the information and its apparent impact on operations, if necessary

COORDINATION

Inputs: Any G2 staff member

Outputs: G3 shift officer

NOTES

- The G3 is the primary user of the G2 information and intelligence.
- The intelligence officer will go to the G3 van with hardcopy of the message or take the G3 officer to see the A&P large screen display.
- This task of emphasizing important information is not directly affected by TOS. However, the G3 will probably have already received the message via TOS and the amount of time required to explain its content should be reduced.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Manages and coordinates the overall collection effort throughout the division.

TASK: Determines intelligence needs relative to mission objectives and plans and corps directives.

FREQUENCY ESTIMATE: When the mission changes, less than once a day

CRITICALITY: 2

DUTY POSITION: Assistant G2, CM&D Section Chief

INPUTS

- Mission statement, usually a frag order or an "implied" mission from corps, followed by a formal mission statement in the corps OPLAN/OPORD
- The intelligence annex in the corps OPLAN/OPORD containing the corps EEI and OIR, terrain analysis, the enemy situation, and weather
- Information needs as stated by the commander and G3 staff
- Discussions with the G2, A&P, and other G2 staff elements

OUTPUTS

EEI and OIR statements placed in the intelligence annex or translated into specific indicators for tasking

COORDINATION

Inputs: G3, G2, A&P, and other G2 elements

Outputs: G2

NOTES

- This task concerns the formal development of EEI and OIR for the division OPORD intelligence annex. The TOS assisted development of specific tasking requirements is covered later in this section and in the section describing the A&P element.
- The question is what do you need to know about the enemy and the battlefield to fulfill the mission objectives.

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- If the officer is experienced, much of this is a mental process. After finding out what the mission or battle situation is, he knows almost immediately what the EEI should be.
- Normally, the officer will discuss the derived EEI with the G2 prior to placing them in the intelligence annex. No further approval is required.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Manages and coordinates the overall collection effort throughout the division.

TASK: Determines the relative priority of intelligence needs.

FREQUENCY ESTIMATE: 3 to 4 times per shift

CRITICALITY: 2

DUTY POSITION: G2, Assistant G2, CM&D Section Chief, Intelligence Sergeant (CM&D)

INPUTS

- Mission statement
- Corps OPLAN/OPORD intelligence annex
- Source of the information requests
- TOS intelligence collection requirements messages and tasking messages

OUTPUTS

The EEI are listed in order of priority in the intelligence annex. The priority of information needs is emphasized in face to face briefings or entered as an item in the TOS tasking message as described in a later Ops/CM&D task description.

NOTES

- Those information needs critical to meeting mission objectives become EEI and others, for which lack of data will not mean mission failure, become OIR.
- The question is, "if we don't find the answer to this, what could happen?" Priority is determined by threat.
- The task of determining tasking priorities will not involve direct TOS interaction. Once determined, however, the priority will be entered on operator generated TOS tasking messages or modified on automatically generated tasking messages.
- The pre-mission determination of which global intelligence needs are EEI and which are OIR is primarily an Ops/CM&D task. The assigning of tasking priorities to TOS tasking messages generated as a result of specific information requests will require close coordination with the request originators.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Manages and coordinates the overall collection effort throughout the division.

TASK: Determines the enemy activities and characteristics which would indicate their probable courses of action.

FREQUENCY ESTIMATE: Primarily for new mission EEI and OIR which should occur less than once per day

CRITICALITY: 4. See notes.

DUTY POSITION: G2, Assistant G2, CM&D Section Chief

INPUTS

- EEI and OIR from the corps and division OPORD intelligence annexes
- Published documents on soviet ground forces providing the basic guideline indicators to be interpreted in light of the situation
- A&P input on the past history of the division facing you. Historical information might include past training, command relationships, performance in past war experience, and the commander's tactical preferences.

OUTPUTS

Terse statements of indicator such as, "Location of heavy artillery forward within X km of the front line," used in developing tasking for collection assets.

COORDINATION

Inputs: A&P chief

Outputs: Indicators included on tasking messages sent to collection agencies

NOTES

- This task is assigned a low criticality because the interviewee felt that most agencies could fulfill tasking without being given specific indicators.
- "Indicators" are activities the enemy is likely to undertake to fulfill a specific intention. For example, if they move their artillery well forward, it is an "indicator" that they intend to attack. To find out where their heavy guns are placed is one of the questions you might ask to fulfill the general EEI of "where will the main attack come from."

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- The A&P chief, the expert on enemy doctrine, is used extensively in establishing indicators for the various EEI and OIR.
- The determination of indicators is based a great deal on the past experience of those making the determinations.
- Under TOS, the requirement for Ops/CM&D personnel to participate in the development of indicators should be limited primarily to the pre-mission development of EEI and OIR. During the mission, most task messages should be very specific and come directly from the organization requiring the information in the form of TOS intelligence collection requirement (ICR) messages. The development of tasking from these sources is explained in a later Ops/CM&D task description.
- The TOS-assisted development of indicators and tasking by the A&P element during the mission is explained in the description of that element.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Manages and coordinates the overall collection effort throughout the division.

TASK: Determines time limits for responding to collection requests.

FREQUENCY ESTIMATE: Primarily for new mission EEI and OIR which should occur less than once per day

CRITICALITY: 2

DUTY POSITION: Assistant G2, CM&D Section Chief

INPUTS

- Mission timing as contained in the corps OPLAN/OPORD
- Estimated time specific enemy activities are expected to occur as developed by the division G2 staff or by corps G2 personnel
- Time a friendly activity is to occur as stated by the G3 staff
- Estimated time that the target object would remain in its present location as determined by G2 or G3 staff members
- Information concerning when certain collection assets are available or can best be used, as taken from the TOS intelligence collection agency (ICA) and intelligence collection characteristics (ICC) files and from discussions with R&S, ATSE, SOTAS, and G3 air personnel

OUTPUTS

- Statement of "Report not later than...." included in the appropriate EEI and OIR descriptions in the OPORD intelligence annex
- Reporting time entered on TOS tasking messages
- Reporting times are contained in tasking briefings of R&S personnel

COORDINATION

Inputs: ● Corps G2 staff
 ● Division G3 staff
 ● Other members of the division G2 staff

Outputs: Any collection agency

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NOTES

- The task of determining time limits for reporting collected information does not involve direct TOS interaction except for the use of ICA and ICC file data to obtain asset status and collection means characteristics to use in determining availability and response time.
- Under TOS, Ops/CM&D involvement in determining time limits should be limited primarily to the pre-mission development of EEI and OIR. During the mission, the organization requiring the information will establish its own time limits as an entry on the TOS ICR message.

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TOS ASSISTED TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Manages and coordinates the overall collection effort throughout the division.

TASK: Assigns collection tasks to intelligence organizations.

FREQUENCY ESTIMATE: See the first entry under notes.

CRITICALITY: 2

DUTY POSITION: CM&D Section Chief, Intelligence Sergeant (CM&D)

INPUTS

- TOS ICR file for intelligence needs statements as entered by TOS users
- TOS ICA and ICC files used by TOS to automatically select the best collection agencies to be tasked for a specific ICR entry

COORDINATION

Inputs: Any division unit or element

Outputs: Any intelligence collection agency including A&P, ATSE, R&S, SOTAS, CI control, IPW, air force weather element (SWO), G3 air, corps G2, brigade S2s, and any other agency that can be contacted directly by division G2 personnel

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update
- Data transfer

PROCEDURES

- TOS assisted - If required, the CM&D console operator will complete ICR file entries for intelligence collection requests received via non-TOS communications or for collection requirements developed by Ops/CM&D, such as those resulting from the original mission EEI and OIR. ICRs generated by other TOS users will be retrievable from the ICR file for assignment to collection agencies.

- TOS assisted - If he desires TOS assistance in determining which collection agencies should be assigned the ICR, he will call up a concurrent display of automatically selected agencies and preferred means combinations to be tasked for this ICR. It will list the agency and means combination in order of preference along with the approximate percentage of the named area of interest each combination covers, the combination's past performance, and the current tasking ratio for each combination.
- TOS assisted - The operator can either accept the automatic tasking, modify it, or retrieve his own agency and means combinations from the ICA file and have TOS use these in creating tasking messages. The operator may elect to delete the ICR if he feels the information has already been requested or collected, or he may return the ICR to the file without taking action, postponing it for later consideration.
- TOS assisted - TOS will display the tasking messages created as a result of operator selections. The operator will then have TOS send the message as is, or he will modify or cancel it. If he sends it, he will always have to enter the tasking priority as it is not assigned automatically. The operator will determine the tasking priority by contacting the ICR originator or by his own personal knowledge of priorities assigned to similar collection tasks. If any of the agencies for which tasking messages have been generated are not TOS equipped or their TOS console is inoperative, the CM&D console operator can hardcopy the message and give it to the secretary-steno for radio transmission or to the intelligence clerk for delivery within the main command post.
- TOS assisted - If the operator feels that the automatic agency and means selection is not selecting the best combination, he will retrieve and modify the tasking algorithm weightings and the table that assigns preferred collection means to specific ICR subject and activity combinations.

OUTPUTS

The outputs of this task will be TOS displays of ICR entries and associated automatic tasking selections, interactive displays for modifying and creating tasking messages, and recording of individual tasking messages in the ICT file with subsequent automatic distribution to the assigned collection agencies.

NOTES

- The division from which the manual baseline data were gathered estimated that they sent out no more than 3 or 4 specific tasking requests per shift. This low number reflects the autonomy of operation of most of their collection agencies based on SOPs that cover the activities they are to report as well as the direct tasking of agencies by elements other than CM&D. Under TOS, all tasking should come through CM&D. No attempt was made to estimate the total tasking that would be performed by CM&D under TOS. However, just considering the estimates of direct tasking now performed by other G2 elements at division raises the tasking message count from 3 or 4 per shift to about

45 per shift and this does not include tasking originating from the G3 and other division staffs.

- The general definitions of the TOS files employed in this task follow:

Intelligence collection requirements (ICR) file will contain the intelligence collection requests entered by TOS users. ICR entries identify the originator and provide details on the information requested.

Intelligence collection agency (ICA) file will contain, for each collection agency, a list of the data collection means available to that agency such as photography, patrols, ground surveillance radar (GSRs), and POWs and their current location, if applicable. This file will be used for manual and automatic assignment of tasking and should be kept current by the agency involved if that agency is TOS equipped or by the CM&D console operator if it is not.

Intelligence collection characteristics (ICC) file will contain detailed operational characteristics of the various intelligence data collection means. It will be used primarily in the automatic assignment of agency and means combinations to specific ICR messages. It might also be hardcopied to aid in manual selection of collection means. After having once been completed, it should require little updating except to make corrections or add new means or enhancements to existing means. Entries to this file should be based on data provided by personnel very familiar with the mean's characteristics, although the data may be entered by the CM&D console operator.

Intelligence collection tasking (ICT) file will contain the actual individual tasking messages generated by TOS as a result of operator selections.

Intelligence collection management tasking algorithm (ICMTA) provides the calculation data for automatic selection of one or more appropriate collection agencies for tasking.

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MANUAL TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Manages and coordinates the overall collection effort throughout the division.

TASK: Resolves conflicts between intelligence data collection tasking assignments.

FREQUENCY ESTIMATE: Rare

CRITICALITY: 2

DUTY POSITION: CM&D Section Chief

INPUTS

- Information about the conflicting tasking assignments supplied by the tasked agency
- Copy of the tasking messages in conflict from the TOS ICT file and the intelligence requirements which generated them from the ICR file
- Personal knowledge of the mission required to decide which task is the most critical
- Discussions with the collection requirement originators to resolve the conflict, if necessary

OUTPUTS

Verbal decision as to which task request should take precedence

COORDINATION

Inputs: Collection agency with the conflict

Outputs: Same as inputs

NOTES

- The conflict is usually between EEI-related tasking originated by the G3, CM&D, or subordinate units and target acquisition tasking originated by A&P.
- Under TOS, all tasking will go through CM&D where a tasking priority will be assigned. This should greatly reduce the number of tasking conflicts. Standing operating procedures must be established for handling tasks with the same priority. Even with explicit procedures, some tasking conflicts will still come back to CM&D for resolution.

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TOS ASSISTED TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Manages and coordinates the overall collection effort throughout the division.

TASK: Monitors the status of collection assets.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 4

DUTY POSITION: CM&D Section Chief, Intelligence Sergeant (CM&D)

INPUTS

- Changes to the TOS ICA and ICC files generated by the responsible collection agency or the main command post tactical operations center element representing them
- Changes, additions, or deletions to agency collection means, their locations, their operational status, or their operating characteristics reported to CM&D via non-TOS communications by collection agencies or their main command post tactical operations center representatives

COORDINATION

Inputs: Any collection agency or its main command post representative

Outputs: None. Outputs consist of changes to the ICA and ICC files.

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update

PROCEDURES

- TOS assisted - The original ICA and ICC files will be built by requesting that the collection agencies complete them or by gathering the data from the agencies and entering the information at the CM&D console.
- TOS assisted - The CM&D operator will compose and enter SRIs that will cause him to be notified when anyone adds, modifies, or deletes entries to the ICA or ICC files. When he receives these changes, he will view them on his display, hardcopy them if necessary, and call the change originator to resolve any problems.

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- TOS assisted - The CM&D operator will receive notification, via non-TOS communications, of changes that need to be made to the ICA or ICC file from collection agencies that are not TOS equipped or whose TOS consoles are not operative. The CM&D operator will retrieve the appropriate record from the file and enter and delete data as reported by the collection agency.
- TOS assisted - When required, the CM&D operator will query, retrieve, and hardcopy portions of either the ICA or ICC files. This might be required if the G2 or assistant G2 wants to know the current status of collection agencies or when there is a shift change.

OUTPUTS

The outputs of this task are TOS SRIs and queries, updated ICA and ICC files, and displays and hardcopy of the contents of the ICA and ICC files.

NOTES

Although the contents of the ICA and ICC files will be used by TOS in automatic selection of agencies and means, the CM&D console operator must himself be aware of the current status for his use in manual selection of agencies and means for tasking.

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TOS ASSISTED TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Manages and coordinates the overall collection effort throughout the division.

TASK: Monitors the collection effort.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 3

DUTY POSITION: CM&D Section Chief, Intelligence Sergeant (CM&D)

INPUTS

- Notification by an ICR message originator that their intelligence need has been fulfilled
- The TOS intelligence collection summary report display. This display shows, for each outstanding tasked ICR, the agencies tasked, the tasking message number, date-time group of each tasking message, the collection priority, and count of responses received on each tasking message.
- The TOS task satisfaction report display. This display shows, for any selected ICR, the ESD input messages received as responses to the ICR grouped by responding agency. It also contains operator options for taking action on the ICR.

COORDINATION

Inputs: Any division element or unit that is TOS equipped

Outputs: Any intelligence collection agency available to the division

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update

PROCEDURES

- TOS assisted - When not otherwise engaged, the CM&D console operator might call up the TOS intelligence collection summary report and review the summary data on each active ICR entry. He will look for ICR entries with a large number of responses, ICR entries with a latest acceptable reporting time that is close to being exceeded, and older entries with little or no response

received. The operator will consider tasking priority, agency task loading, and the nature of the information requested when judging if responses are overdue for an ICR.

- TOS assisted - When the operator finds an ICR entry that meets any of the above criteria, he will call up the task satisfaction report display associated with that entry and review the ESD messages received in response to the request. If he feels that the ICR entry has been adequately fulfilled, he will call the ICR originator and ask him if the task can be cancelled. If the task can be cancelled, the CM&D operator will select the option on the display that will automatically generate and send task cancellation messages to all agencies tasked for the specific ICR entry. If the CM&D operator feels that sufficient effort is not being expended to fulfill the task, he will select the option on the display that will automatically generate and send task reminder messages to all agencies tasked for the ICR entry. He may call the agencies to see if there are problems in gathering the information and, if so, he might manually generate tasking messages to additional agencies to help collect the information. If the operator decides to take no action on the collection request, he selects another option that removes the task satisfaction display.
- TOS assisted - ICR originators may call the CM&D operator to inform him that his request has been fulfilled. In this case, the CM&D operator will go directly to the task satisfaction report display for that ICR entry and, select the option to automatically generate and send task cancellation messages.
- TOS assisted - When required, the CM&D operator will call up and hardcopy part or all of the summary report for the G2 or assistant G2, or he may write a summary of the report for the G2 to use in the commander's briefing.

OUTPUTS

The outputs for this task will be TOS summary and task satisfaction displays. TOS task cancellation and task reminder messages will also be output.

NOTES

- This task will serve the dual purposes of assuring that requested information that can be collected is collected and of providing file management of the ICR and ICT files. These two files could become quite large if unnecessary entries are not removed.
- If a tasked agency is not TOS equipped, task cancellation and task reminder messages for that agency will be sent via voice communications.

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TOS ASSISTED TASK

ELEMENT: G2 Ops/CM&D Main

FUNCTION: Manages and coordinates the overall collection effort throughout the division.

TASK: Manages the named area of interest (NAI) files.

FREQUENCY ESTIMATE: See second entry under notes.

CRITICALITY: 2

DUTY POSITION: CM&D Section Chief, Intelligence Sergeant (CM&D)

INPUTS

- EEI and OIR developed prior to the mission
- G3 personnel identification of NAIs developed prior to the mission
- NAI additions, deletions, and changes received via TOS

COORDINATION

Inputs: • G3 personnel for pre-mission NAIs
 • Any TOS-equipped division element or unit for changes to the NAI file

Outputs: Any TOS-equipped division element or unit to notify them of changes to their NAI entries

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update

PROCEDURES

- Manual - NAIs for a new mission may be determined from the mission EEI and OIR and maps of the area of interest. Other NAI will be developed by G3 personnel as part of their operation planning. These NAIs will be collated, combined where necessary, and assigned a code. These original NAIs might be distributed in the OPORD intelligence annex, made a part of the operations overlay, or placed on their own map base to provide a graphics presentation.

- TOS assisted - The CM&D console operator will enter the original NAIs in the TOS NAI file and delete all previous entries that are not valid for this mission. He will coordinate with the system controller concerning which positions should have authority to modify the file and to determine the threshold alarm value for the file.
- TOS assisted - During the mission, the CM&D operator might periodically look for duplications. He might display the NAI graphically. If there are duplications or ones with much overlap, he will call one of the NAI originators and delete the duplicate if agreeable.
- TOS assisted - If the file size reaches the set threshold value, the CM&D operator is automatically informed. If possible, he will combine two or more NAIs to reduce the file size. TOS users could then be informed of the changes either by TOS relay message, radio, or frag order.

OUTPUTS

The outputs of this task are modifications to the NAI file, a list of the original mission NAI, and notification of file changes sent to users.

NOTES

- NAI file entries are codes assigned to geographical areas, points, or lines that provide a shorthand method for TOS users to specify NAIs when developing SRIs and file queries.
- No estimated frequency for this task was available from the manual baseline data as the task is not required in the manual configuration. The frequency will depend on the stability of the battlefield. If the front line is moving rapidly or if there is much troop movement even around a stable front line, many changes to the NAI file can be expected.
- Changes to the original mission NAI should not be made during the conduct of the mission unless the area of interest changes appreciably. Additional or modified NAI needs would be recorded as new NAIs in the file. In this manner, stable list of basic NAIs could be maintained and the user would not be required to query the NAI file to find the latest code definition each time he composed a new SRI or query.

PERSONNEL

TABLE 4.
G2 Ops/CM&D Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
G2	05	35A	1	05	35A	1
Assistant G2	04	35A	2	04	35A	2
CM&D section chief	03	35A	2	03	35A	2
Intelligence officer	02	35A	2	-	-	-
Intelligence sergeant (chief)	E9	96B	1	E9	96B	1
Intelligence sergeant (CM&D)	E7	96B	2	E7	96B	2
Intelligence assistant	E5	11B	2	-	-	-
Secretary-steno	E5	71C	2	E5	71C	2
Intelligence clerk	E3	71B	2	E3	71B	2
Total Officers/Enlisted Men			7/9			5/7

The above table depicts a possible manning a division might employ to sustain a 24-hour capability in a tactically deployed manual Ops/CM&D element and the estimated effect TOS will have on that manning.

As was stated at the beginning of this section, Ops/CM&D is really two functional elements that were combined for the purpose of this analysis because many of the tasks they perform involve personnel from both elements.

Ops/CM&D will be located at the main command post, with the exception of the G2 himself whose location at any time will depend on the situation and the commander's desires. All the remaining personnel should be located in the same van, although the assistant G2 will spend much time visiting the other main command post intelligence elements. The recommended manning should be sufficient for 24-hour operations using 12-hour shifts.

CM&D will have a dedicated TOS console used primarily for intelligence data collection management. The G2 and assistant G2 will have access to TOS data from any console where they are currently located.

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The manning requirements for those personnel who can be uniquely identified as operations element personnel, namely, the G2, the two assistant G2s, and the intelligence sergeant (chief) are not expected to be altered under TOS. They will use TOS data but will not operate TOS consoles. TOS will not appreciably alter the number and types of tasks they perform, but it will change the procedures and material used in performing them.

The remaining personnel are assigned directly to CM&D. Of those positions listed for manual operations, it is recommended that the intelligence officer and intelligence assistant positions be eliminated under TOS. The intelligence officer is involved primarily in documenting formal paper reports. With the exception of the OPORD intelligence annex, all intelligence documents published by Ops/CM&D should be eliminated under TOS. The intelligence annex will be prepared by the assistant G2s and the CM&D section chiefs.

The intelligence assistant positions are recommended for elimination under TOS as those positions are employed primarily in maintaining the CM&D situation map. CM&D is not envisioned to have a large screen display device under the current TOS hardware configuration and it is recommended that CM&D not attempt to manually maintain a situation map under TOS. The overwhelming majority of the reports on which the map must be based will no longer pass through CM&D and having them sent to the CM&D console would interfere with intelligence collection management. One of the recommendations described in this section is that CM&D be provided a large screen display device. If this recommendation is implemented, positions will be required to operate the large screen device console but it is recommended that these be 96B MOSs and at least a 20 skill level.

It is recommended that the CM&D section chiefs and the intelligence sergeants (CM&D) be the only shift personnel who operate the CM&D console. The only efficient way of performing the intelligence collection management function is for the console operator to be the one who makes the actual tasking decisions. The operator should be highly skilled in intelligence functions and have the authority to make tasking decisions. The CM&D section chiefs should be the primary operators and the intelligence sergeant should act as relief and fill in when the officer is performing other duties.

The secretary-steno and intelligence clerk will probably not interact directly with TOS except for disconnecting, preparing for transport, transporting, and setting up of the TOS console under the supervision of the intelligence sergeant. During tactical operation of the CM&D element, the secretary-steno will man the intelligence FM radio net and record the messages in the G2 journal as required. The intelligence clerk will relieve the secretary-steno, help him with the G2 journal, type the OPORD intelligence annex, and pickup and deliver documents within the main command post.

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RECOMMENDATIONS

Add a TOS large screen display device in the CM&D area.

Currently, only two large screen display devices are envisioned for the main command post, one assigned to the A&P element in the all source intelligence center van and the other assigned to the G3 element. The A&P device would be used to display the enemy situation and the G3 device would be used to display the friendly situation.

It is recommended that an additional large screen display device be placed in the CM&D van. The justifications for this recommendation are as follows:

- A large screen display of the intelligence situation should be readily accessible to all main command post tactical operations center elements for purposes of analysis and planning. The A&P device will be in the all source intelligence center van which requires special intelligence clearance for admittance, a clearance level that many tactical operations center intelligence data users will not possess. To require these people to query TOS ENSIT files for data that can rapidly be obtained from a large screen situation display would consume much personnel and system time. It is doubtful that much intelligence information will be displayed on the G3 large screen display due to friendly situation data display requirements. Also, TOS console utilization throughout the main command post is expected to be high enough to preclude the creation of console graphics displays every time a particular element needs to view the current enemy situation.
- The all source intelligence center van should remain reasonably clear of congestion to facilitate classified control and enhancement of the analyses and analyst interactions performed there. This van will be very crowded with four consoles and the large screen display device will probably be under nearly constant use by ASIC personnel. Blocking of their view of the display and meeting display requirements levied by other elements could be very disruptive.
- CM&D should be able to use the display files maintained by A&P and avoid a duplication of effort. When required, CM&D personnel could create their own displays.
- If the main tactical operations center is properly laid out, the CM&D device could be used for both formal and informal briefings.

It is not recommended that CM&D maintain an acetate situation map because the majority of the data required will be resident in TOS and using the CM&D console to retrieve it will interfere with other CM&D TOS functions.

Add an item for entering priority in the ICR entry format.

The current design contains an item in the ICT message for entering a numeric

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code that represents the priority assigned to the tasking request. The ICR entry format from which the ICT messages will be automatically created will not contain an item for priority. The CM&D console operator will have to manually enter the priority on each generated ICT message.

It is recommended that the ICT priority item be added to the ICR record format and that the entry be automatically transferred to the corresponding item on the ICT message. The justification for this recommendation is that in the current design, the CM&D console operator will have to coordinate with the ICR originator to determine the priority to assign to the task, consuming a large amount of personnel time and delaying the output of tasking messages.

ANALYSIS AND PRODUCTION ELEMENT

GENERAL

The analysis and production (A&P) element, supervised by an intelligence officer, is located in the division main command post tactical operations center. A&P's location within the tactical operations center is the all source intelligence center van which requires special intelligence clearance for entry and thus is isolated from the rest of the tactical operations center.

MISSION

The mission of the A&P element is to gather combat information from maneuver units and collection agencies, compare and analyze these data, and produce intelligence products. Intelligence products consist of conclusions concerning enemy unit current locations, composition, and strength; the enemy's intentions; locations and types of enemy targets for artillery or aerial suppression; and the effects of terrain features and weather on both enemy and friendly courses of action.

OVERVIEW OF TOS OPERATIONS

Under the current TOS hardware configuration, A&P will have four TOS consoles, a large screen display device, and a terminal control unit dedicated for its use. This gives A&P more system access than any other division element or subordinate unit. It reflects the nature of the TOS data base and design direction as well as a consideration for the mass of data that must be manipulated by the A&P element. There are no A&P tasks that will not involve some interaction with TOS.

A&P personnel will use TOS to store combat information. Maneuver units and collection agencies will either enter combat information directly into the TOS ESD file or report their findings to a main command post element for TOS entry. A&P analysts will use the TOS filter, correlation, and generalized query capabilities to compare these ESD messages for confirmation. The analysts may add clarifying remarks to the incoming messages and add or change the reliability and validity ratings based on their knowledge of the source and the current enemy situation. The analysts will also eliminate redundant reports by combining information from two or more messages into one message and deleting the others.

A&P personnel will use TOS in analyzing combat information. The TOS SRI, correlation, and generalized query capabilities will be used by the analysts

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to bring related messages to their console for comparison. The analysts will also compare ESD messages with TOS graphics displays of the situation.

For terrain analysis, the analysts will use terrain feature information from the TOS TER file which will be supplied primarily by the division and corps engineers. The analysts will create TOS graphics terrain displays showing obstacles, key terrain, observation and fire, cover and concealment, and other terrain characteristics that might be contained in the TER file. To aid in determining the possible enemy avenues of approach, the analysts will use information from the ESD, TER, and EOB files as well as from the displays they create.

For enemy order of battle analysis, the analysts will compare documented information about the enemy's order of battle and tactics doctrine with the current and past enemy situation as depicted by TOS. They will use the TOS SRI, correlation, and query capabilities to retrieve TOS ESD file messages that aid in determining enemy unit identifications, composition, disposition, and strength. The analysts will display historical records from the EOB file in order to track the recent past movements of enemy units as an aid in locating and identifying units and in determining the enemy's course of action. They might create and prestore TOS graphics templates that depict the doctrinal arrangement of enemy units for various courses of action. These could be adjusted to fit the local terrain and weather and then compared with current enemy dispositions to aid in determining the enemy's course of action.

ESD, TER, and EOB file information will all be used in target analysis. SRIs, stored correlation queries, and generalized queries will be used to retrieve TOS information useful in developing targets. The analysts will use terrain and enemy situation graphics displays to aid in determining the most likely locations of such enemy facilities as command posts, supply areas, and artillery batteries.

A&P personnel will use TOS to store and disseminate their analysis results. The analysts will create and distribute ESD messages and relay messages that contain important analysis conclusions. The analysts will create and distribute TER and EOB file entries that report the results of terrain and enemy order of battle analysis, respectively. The display files which they create will contain current terrain and enemy situation data and might be used at consoles and large screen displays outside the A&P van. A&P personnel may also maintain a staff working file containing current summaries of intelligence outputs in the various analysis areas.

A&P personnel will be responsible for managing the ESD, EOB, and TER files. Management of the EOB file should not involve much more than deleting historical records that are no longer needed, thus keeping the file at a manageable size. The TER file will require purging of terrain features that are no longer within the division's area of operation. Management of the ESD file will be more

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involved. The ESD file will grow more rapidly and to larger proportions than any other TOS file and thus must be closely monitored to avoid system data overloads. The analyst assigned to manage the ESD file will establish automatic purge criteria to delete ESD entries based on age and, within age, based on message content features such as source or subject. He will establish a threshold to warn him when the file approaches some critical size and will use immediate purging to reduce the file to an acceptable size. He will delete those messages which are no longer of interest to TOS users and coordinate with users of low interest messages to determine if they also can be deleted.

The A&P officer-in-charge will work with the TOS system controller in assigning functions to the different A&P consoles. He will also work with the system controller in identifying personnel authorized to read and write the ESD, EOB, and TER files and in establishing limits on the number of SRIs allowed against ESD, EOB, and TER files.

A&P personnel will be responsible for preparing their TOS equipment for transportation and setting it up and checking it out at the new command post location.

All personnel in the A&P element will be trained in intelligence operations. Therefore, the assignment of analysis areas to specific positions should be left to the discretion of the officer-in-charge. Assignment then could be based on individual strengths and weaknesses as well as the current battlefield situation and workload. What follows are some possible organizations of the A&P element under the current TOS design with comments on their apparent strengths and weaknesses. Although these organizations probably represent the most likely configurations, the detailed assignments within a configuration would be subject to great variation and are presented here only to better define the configurations.

Configuration A - Organization by functional analysis areas

Console 1 - EOB analysis and ongoing terrain analysis

Console 2 - "Activities" analysis

Console 3 - Target identification

Console 4 - Supervisory and integration functions

Large screen display console - Display file maintenance and assisting where needed

In this configuration, ESD input messages would be routed to one or more of the first three consoles, depending primarily on the subject of the message.

Console 1 would receive all messages of use in determining enemy unit types and

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Console 3 - Rear area activities

Console 4 - Supervisory and integration functions

Large screen display console - Display file maintenance and assisting
where needed

In this configuration, ESD input messages would be routed to one or two of the first three consoles depending on the location of the reported activity. The echelon boundaries could be defined by named areas of interest with some overlap and be capable of easy redefinition. Each of the first three console positions would perform order of battle analysis, activities pattern analysis, terrain analysis, and target identification in his assigned geographic area.

Console 4 and the large screen display device console would perform the same functions as described in configuration A.

This configuration would avoid much of the overlap in message handling that would occur in configuration A, although there still would be control and overload problems in accessing and manipulating the ESD file. It would not seem to provide the analysis continuity of configuration A but would probably make it easier to interact with the G3 as it appears to take the same approach to the battlefield as the G3.

There could be variations on this configuration depending on the situation. For instance, two analysts could split up first echelon activities while the third handles both second echelon and rear activities.

Configuration C - The chief analyst concept

Console 1 - Message filtering and ESD file maintenance

Console 2 - Data base manipulation

Console 3 - EOB and TER file maintenance and data base manipulation

Console 4 - Chief analyst

Large screen display console - Display file maintenance and assisting
where needed

This configuration centers around one primary analyst who is fed information from the other four positions and tasks them to perform various TOS interactions.

Console 1 would receive all ESD input messages. This analyst would compare them with previous messages and the current situation and rate the message reliability, adding remarks to the message as appropriate. He would make judgements

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identifications. This analyst would identify and track enemy units, attempting to discern enemy intentions by templating unit movements and echeloning, and maintain the EOB file. He also would receive all messages dealing with terrain during mission conduct and manage the TER file on an ongoing basis. All positions would probably participate in the original mission terrain analysis and the results of that are not expected to alter much during the mission.

Console 2 would receive all messages of use in determining enemy intentions from the pattern of reported activities or "indicators." This analyst would look for patterns in such enemy activities as logistics, chemical/biological/radiological and conventional fires, engineer activities, and fortification.

Console 3 would receive all messages of use in identifying the type and location of possible targets for artillery and air strikes. This analyst would identify and locate nuclear delivery systems, command posts, staging areas, and logistics areas. He would concentrate his effort based on the commander's priority of fires and would coordinate closely with Fire Support Element (FSE) and Division Artillery (DIVARTY) personnel.

Console 4 would monitor and direct the activities of the other three consoles, assist where required, manage the ESD file, and create or review outgoing messages.

The large screen display console would maintain the display files that show the current terrain and enemy situations. The large screen display would be the primary method of indicating the present intelligence situation. This position would also assist any of the other three consoles by doing TOS interactions for them, assuming that the large screen display console will have such capabilities.

There would seem to be much overlap in the use of incoming messages with this configuration. The first three consoles could conceivably receive and analyze the same message with subsequent control and overload problems in accessing and manipulating the ESD file and in using routines that could take relatively large amounts of machine time such as correlation requests and queries. However, it would seem that if these disadvantages could be controlled, this configuration would permit analysts to concentrate in logical analysis areas and utilize the strengths of individual analysts. This, hopefully, would allow the best analysis continuity and produce the most thoroughly analyzed product.

Configuration B - Organization by battlefield zones

Console 1 - First echelon activities

Console 2 - Second echelon activities

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as to which messages or groups of messages to transmit to the chief analyst's console. He would maintain the ESD file, purging messages when required.

Console 2 would perform data base queries, enter SRIs and tasking requests, obtain hardcopy, enter and distribute outputs, and perform other TOS interactions as directed by the chief analyst, primarily against the ESD file.

Console 3 would maintain the EOB and TER files, and perform the same types of data base manipulations as console 2, only against files other than the ESD file.

Console 4 would be the chief analyst's console. He would be fed data from the other four positions and would direct the other analysts to perform TOS interactions. He would make the majority of determinations as to tasking requests, order of battle conclusions, pattern recognition, terrain analysis, target identification, and element outputs.

The large screen display console position would be assigned the same tasks as described in the preceding two configurations.

This configuration would appear to avoid most of the control and allocation problems expected with the other two configurations. It might, however, create some bottlenecks as a result of all incoming ESD messages filtering through one position and all decisions being made by one position.

FUNCTIONS AND TASKS

Functions and tasks performed by the A&P element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 5.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 5.
Analysis and Production Element Positions, Functions,

FUNCTIONS AND TASKS	Intelligence Officer	Order of Battle Technician
Produces and provides combat intelligence.		
Receives, records, and distributes information from all sources.	(X)	(X)
Performs terrain and weather analysis.	(X)	(X)
Performs enemy order of battle analysis.	(X)	(X)
Identifies targets.	(X)	(X)
Coordinates target information.	(X)	(X)
Maintains an estimate of the enemy situation.	(X)	(X)
Responds to requests for information.	(X)	(X)
Manages the enemy situation data (ESD) file.	(X)	(X)
Assigns management tasks and performs ENSIT data base management.	(X)	(X)
Performs the hookup, energizing, initialization, and checkout of the TOS consoles, large screen display device, and terminal control unit.		(X)
<hr/>		
(X) - TOS Assisted		

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ns, and Tasks

an	Order of Battle Sergeant	Intelligence Sergeant	Order of Battle Analyst
	(X)	(X)	(X)
	(X)	(X)	(X)
	(X)	(X)	(X)
	(X)	(X)	(X)
	(X)	(X)	(X)
	(X)	(X)	(X)
	(X)	(X)	
	(X)	(X)	(X)

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TOS ASSISTED TASK

ELEMENT: G2 A&P Main

FUNCTION: Produces and provides combat intelligence.

TASK: Receives, records, and distributes information from all sources.

FREQUENCY ESTIMATE: 750 incoming messages per shift (see notes)

CRITICALITY: 2

DUTY POSITION: Intelligence Officer, Order of Battle Technician, Order of Battle Sergeant, Intelligence Sergeant, Order of Battle Analyst

INPUTS

- TOS ESD file input messages from all sources
- Spot reports received from CM&D
- Special studies and documents received via courier through CM&D

COORDINATION

Inputs: Any intelligence collection asset authorized to input ESD messages to the division data base

Outputs: Any division or corps element or unit deemed to have interest in the content of an ESD message but who were not on the original distribution

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update
- Data transfer

PROCEDURES

- Manual - The intelligence officer will assign specific analysis areas, geographical areas, or TOS functions to the various TOS consoles and console operators in the A&P element.
- TOS assisted - Each A&P console operator will define and enter SRIs and stored correlation queries that will bring those incoming ESD messages to his console which meet the information requirements of his assignment.
- TOS assisted - Each A&P console operator will define and enter filter parameter sets, prestored general queries, or individual queries that will allow

him to retrieve from the ESD file those existing messages which reported the same information as a new incoming ESD message.

- TOS assisted - When message "redundancy" occurs, the new message will be viewed along with its counterpart(s) from the ESD file. The operator will select one of the messages for retention and change that message so it reflects the combined information in all the messages involved. Typically, the changes made will involve updating the reliability and validity entries to reflect the confirmation provided by the other message(s), adding to the remarks and description entries any clarifying data not in the message to be retained, and adding to the remarks entry a statement of the number and sources of confirming messages. The operator will then delete the other message(s). It may be wise for each operator to maintain a hardcopy file of the messages he deletes in case later reference is made to them.
- TOS assisted - When an ESD message is input that contains no distribution and there are no active SRIs or stored correlation queries for the type of information contained in the message, the message will be automatically routed to the A&P console assigned to perform ESD file management. The operator will analyze the message content and decide if an A&P console or any other TOS equipped element or unit might have need of the message. If so, he enters the distribution and retransmits the message. If not, he will either decide to retain the message if it could be used later or delete it. Deleted messages should be hardcopied prior to deletion.
- TOS assisted - The analyst may disagree with the reliability and validity ratings assigned by the reporting agency to an incoming ESD message or he may believe that more needs to be added to the remarks section even though no confirming messages exist. He will change the reliability and validity ratings if he is convinced that they are wrong and he will add remarks as required. If he merely doubts the reliability or validity ratings he might state his doubts in the remarks section without changing the rating items themselves.
- TOS assisted - Any A&P console operator who receives an incoming message will be able to add a position or console to the distribution and retransmit the message if he feels the additional recipient needs the information.
- TOS assisted - Spot reports received by CM&D over the intelligence FM radio net might be hand carried to the A&P element. If so, the console operator receiving them will enter them as ESD input messages, giving them the distribution recorded by CM&D and adding any distributees he deems necessary.
- Manual - Special studies or intelligence documents may come in over the teletype or via courier. They will ordinarily be delivered by CM&D or picked up by the order of battle analyst.

OUTPUTS

The outputs of this task are TOS replies to filter and query entries; automatic display of non-assigned ESD messages; and ESD entries, modifications, and deletions.

NOTES

- This task describes the processing typical of all incoming messages. The specific uses made of these messages and the products produced from them are described in later A&P task descriptions.
- The task frequency estimate for this task is that given by the investigated division for their manual operation. The original manual estimate for messages coming from CM&D (i.e., primarily over the intelligence radio net) was stated in terms of one per minute. This may, in fact, reflect the highest rate of receipt and not the average and thus 750 per shift from all sources might be an inflated rate. However, this estimate does not include new collection means expected to be available when TOS is operational, such as SOTAS and remotely piloted vehicles.
- The procedures described for this task provide partial file management for the ESD file by minimizing, to the extent possible, the number of inputs to the file. The remaining file management procedures are described in a later A&P task description.
- The recommended procedures for this task indicate a lack of centralized control of inputs to the ESD file. The procedures show each A&P analyst controlling those input messages within his analytical area. The reasoning behind this is that the anticipated rate of incoming messages is too high to permit one individual to view and take action on all new ESD messages. Also, the current design of the TOS ESD filter function does not appear flexible enough to permit adequate file control. The procedures used here, however, also have the potential for many problems. It can be expected that two or more A&P positions will frequently have outstanding SRIs, stored correlation queries, or filter criteria which will retrieve the same incoming ESD message. Unless some efficient means of control can be found, these procedures might result in two more analysts taking different actions on the same message. Also, incoming ESD messages which are not addressed to A&P or would not be retrieved by any outstanding A&P SRI, stored correlation query, or filter criteria but are addressed to or retrievable by requests from any other TOS console, could conceivably never be detected by A&P even though they contain potentially useful information. It is recommended that this latter problem not be resolved by having all incoming ESD messages addressed to A&P. This would either force them all to one console creating the bottleneck mentioned above, or would distribute them to consoles not currently needing the information. A possible method of at least partially alleviating the problem by changing the filter function is contained in the recommendations section of this element description.
- Standing operating procedures must be developed describing the types of information and details required in ESD input messages. Standardized procedures should reduce the amount of interaction between A&P and the message originators.

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TOS ASSISTED TASK

ELEMENT: G2 A&P Main

FUNCTION: Produces and provides combat intelligence.

TASK: Performs terrain and weather analysis.

FREQUENCY ESTIMATE: Primarily when the mission changes, but new information can be added anytime

CRITICALITY: 1

DUTY POSITION: Intelligence Officer, Order of Battle Technician, Order of Battle Sergeant, Intelligence Sergeant, Order of Battle Analyst

INPUTS

- Terrain information from the TOS TER file
- Terrain information from the TOS ESD file
- Terrain information received directly from the division engineers
- Weather data from the TOS intelligence summary staff working file
- Weather information received directly from the staff weather officer
- Analyzed terrain data as contained in the corps OPORD or otherwise obtained from corps G2 personnel
- Aerial photographs and imagery interpretation data from corps R&S
- Terrain maps
- Effects of weather on personnel from the division medical officer
- Enemy force information from the EOB file

COORDINATION

- Inputs:
- Division engineers for terrain information
 - Staff weather officer for weather information
 - Division medical officer for information concerning probable effects of weather on personnel and recommendations for clothing
 - Corps G2 personnel for analyzed terrain data
 - Corps R&S element for aerial photography and imagery interpretation data
- Outputs:
- G2 or assistant G2 given terrain analysis results for inclusion in the division intelligence annex and commander's briefings
 - TER file data available to any authorized TOS user via the SRI, correlation, and query capabilities
 - Terrain summary data in the staff working file available to any TOS user via the query capability

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics
- File update

PROCEDURES

- Manual - A&P personnel will study the terrain analysis and weather information contained in the corps OPORD intelligence annex with the aid of terrain maps. They will look primarily at the military aspects of terrain including observation and fields of fire, cover and concealment, obstacles, key terrain, avenues of approach, visibility, trafficability, precipitation, and effects of weather on personnel and equipment performance. They will further concentrate their study of these aspects on how they relate to the division's mission. They will identify areas where more detailed or additional information is required to meet the mission information needs. Hopefully, the assistant division engineer and the staff weather officer will participate directly in this analysis.
- TOS assisted - The TER, ESD, and intelligence summary staff working files will be queried to retrieve existing data that might satisfy the information needs identified above. These data will be hardcopied, analyzed, and compared with the corps intelligence annex terrain information.
- Manual - Specific, detailed requests for additional engineering, weather, and medical information might be explained in face to face or voice communications with the assistant division engineer, staff weather officer, or division medical officer, respectively. If the reply is immediately available or does not qualify for TOS entry, it will be directly written into the existing terrain analysis data.
- TOS assisted - For those gaps that still exist in our knowledge of terrain characteristics and weather factors, TOS ICR messages will be created and entered in the system. These ICR messages will become tasking messages sent to collection assets through CM&D element interaction. SRIs and correlation queries will also be entered against the ESD and TER files to retrieve incoming messages that report needed terrain information.
- TOS assisted - A terrain map of adequate size to cover the area of operation might be used as background for the TOS large screen display. A basic graphics terrain display file could then be created and displayed by entering obstacle, key terrain, and cover and concealment data existing in the TER file. Other data could be added when available.
- TOS assisted - Data from the EOB file, or a display file created from it, can be overlaid on the terrain display to aid in determining the possible enemy avenues of approach. The EOB data displayed will include current enemy unit types, locations, and force boundaries. Historical EOB file data might also be temporarily displayed, if available. Historical data might be

used to analyze the direction and rate of movement and changing juxtapositions of enemy units which give evidence of avenues of approach. Friendly unit types and locations from the TOS TD file might also be displayed for this analysis.

- TOS assisted - The analysts will study the displayed data to help determine the possible avenues of approach. They will retrieve information concerning road, bridge, ford, and cross country trafficability characteristics from the TER file, if available. They will look at valley and pass dimensions, slope angles, high ground, and cover and concealment characteristics along every possible approach avenue. They will look at the forecasted weather and judge how it could affect trafficability and visibility along each avenue. Combining this information with the TOS EOB and TD file data, they will draw conclusions as to the most likely avenues of approach and the size of enemy unit each avenue can accommodate. These conclusions will be added to the written terrain analysis data. The avenues will be entered in the TER file and might be graphically displayed on the basic terrain display.
- TOS assisted - A separate display overlay might be created showing the lines of observation from various high points within the area of operation or from known locations of enemy radar and other observation posts. The inputs to this overlay could be drawn from both the TER and ESD files. It would be useful to G3 personnel in operations planning and to counterintelligence personnel in helping to determine "how the enemy sees us."
- TOS assisted - The terrain analysis results in written form and the clarifying displays will be shown to the G2 or assistant G2 for his comments and questions. When approved, they might be placed in the division intelligence annex along with EEI and OIR concerning voids in terrain knowledge. They will also be used as briefing material for the commander. The written results might also be summarized in a staff working file along with other intelligence summary data as explained in a later task. The basic terrain display, with or without the map background, might be used as the basic large screen or console graphics display upon which enemy situation data could be overlaid.
- TOS assisted - Throughout the mission, ESD and TER file inputs will be received that impact the terrain analysis. Where appropriate, they will be used to modify the terrain display files and the terrain analysis summary information stored in TOS. Entries in the TER file that describe terrain features no longer in the division's area of operation will be purged.

OUTPUTS

The TOS outputs of this task are generalized queries, stored correlation queries, SRIs, and ICR messages; the responses to these requests; updated TER and staff working files; and new and updated display files. Also output are handwritten terrain analysis results.

NOTES

- The developmental Army Terrain Information System (ARTINS) may greatly impact the human analysis and procedural requirements of this task. ARTINS is expected to aid in areas of terrain analysis such as line of sight observation, cross country movement, cover and concealment, hydrologic effects, sensor placement, soil moisture strength prediction, and fields of fire calculation. Because of ARTINS, no recommendations are included here for adding automated terrain analysis routines to TOS. It is felt that such routines are seriously needed to aid in a critical process that must develop wide ranging conclusions from a wide variety of information but it appears that ARTINS will supply these routines. TOS will provide the means of storing and displaying the results of ARTINS analysis.
- Time restraints will not always permit the division A&P element to wait for receipt of the corps OPORD intelligence annex before beginning their own terrain analysis. They might have to make assumptions about the new mission details and start their analysis from whatever information exists at division at that time. Also, the division typically requires greater detail than the corps to meet their mission information needs. For example, corps is typically interested in identifying avenues of approach that will accommodate division size forces whereas division must consider, at a minimum, those avenues that can accommodate regiment or brigade size forces.

TOS ASSISTED TASK

ELEMENT: G2 A&P Main

FUNCTION: Produces and provides combat intelligence.

TASK: Performs enemy order of battle analysis.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 1

DUTY POSITION: Intelligence Officer, Order of Battle Technician, Order of Battle Sergeant, Intelligence Sergeant, Order of Battle Analyst

INPUTS

- TOS ESD file entries
- TOS EOB file entries
- TOS terrain and enemy situation display files
- Documents on enemy doctrine
- Corps OPORD intelligence annex and special order of battle studies and manuals

COORDINATION

Inputs: Corps G2 for intelligence annex and order of battle studies and manuals

Outputs:

- G2 or assistant G2 given order of battle analysis results for inclusion in the division OPORD intelligence annex and commander's briefings
- A&P ESD messages sent to any element or unit needing the intelligence data
- EOB and staff working file order of battle information available to any authorized TOS user via the generalized query capability

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics
- File update

PROCEDURES

- Manual - A&P personnel will study all enemy order of battle information included in the corps OPORD intelligence annex and in any special order of battle studies provided by corps. This information generally concerns enemy units down to regiment size. The types of information that may be included are enemy unit identifications, compositions, locations, strengths, equipment, command personalities, peculiarities and weaknesses, and probable courses of action. Using order of battle documents, the analysts will attempt to determine the types, and maybe the identifications, of the battalions and fire support units that should compose each regiment that might oppose the division.
- TOS assisted - This basic order of battle information will be entered into the EOB file using a separate record for each enemy unit. A display file could be created that graphically displays enemy units whose location has been determined along with their identification, if known. Other, unlocated, units might be listed to the side of the display.
- TOS assisted - The analysts will query the existing ESD file and retrieve all messages that might help in identifying and locating enemy units. These messages will include any that report the sighting of troops, weapons, and vehicles; prisoner interrogations and uniform markings; and the results of electronic intelligence gathering. The analysts will study these reports and draw conclusions where sufficient evidence exists. They will enter these conclusions in the appropriate EOB file records and update the EOB display file.
- TOS assisted - The analysts will study the located enemy units as they are displayed and the information on the units that is contained in the EOB file. The analysts will determine which enemy units remain unlocated and which located units remain unidentified.
- TOS assisted - The order of battle display and the contents of the EOB file will be shown to and discussed with the G2 or assistant G2. Approved order of battle data and the EEI and OIR concerning voids in our knowledge of the enemy will be placed in the division OPORD intelligence annex and briefed to the commander. A&P personnel will enter their own ESD input messages to distribute significant conclusions concerning the enemy order of battle. An enemy order of battle summary might also be maintained in the intelligence summary staff working file. The G2 or assistant G2 will gather order of battle information from A&P twice daily for the commander's briefing.
- TOS assisted - Display files might already exist or might be developed that graphically display the doctrinal positioning of enemy units for various intentions. If such displays are used, they could be overlaid on the terrain display and the current order of battle display. The relative doctrinal unit positions could be adjusted for known unit locations and local terrain characteristics. These locally adjusted "templates" could then be used to postulate the positions of unlocated units.
- TOS assisted - The analysts will enter TOS ICR messages requesting collection of missing order of battle information. The analysts will also enter

SRIIs and stored correlation queries against the ESD file to retrieve incoming messages that report order of battle related information.

- TOS assisted - The analysts will determine which enemy units are committed against their division and which enemy units are capable of reinforcing these committed units. The analysts will make this determination by viewing the graphics display of enemy unit locations. They will look at the relative positioning of units to determine which ones are committed. They will determine how far other units would have to travel to reinforce the committed units and, from this, decide which of these units could reinforce within the mission timeframe. An indication of the determined employment status of each unit will be entered in the EOB file.
- TOS assisted - A&P analysts will receive all ESD messages reporting enemy losses. From the location and type of losses they will attempt to determine which enemy unit(s) sustained the losses. They will attempt to eliminate duplicate reports by using the TOS filter function. They might use a staff working file to keep the estimated original strength and a tally of estimated losses and reinforcements for each unit or they might maintain this information on paper. From these figures they will calculate a "combat effectiveness percentage" which will be maintained for each unit entry in the EOB file. When an enemy unit's estimated strength reaches a level that might seriously impair its ability to fight, an A&P ESD message could be generated reporting this information.
- TOS assisted - The analysts will attempt to determine the enemy's intentions using the collected order of battle data. When the analysts receive sufficient evidence to convince them that a particular enemy unit has changed location, they will update the EOB file record for that unit. The old location, along with other data, will be retained as a separate record. These historical records for each enemy unit can be selectively displayed by time and/or unit to retrace the developing enemy order of battle. The analysts will use these historical displays for pattern analysis, comparing them with enemy tactical doctrine to draw conclusions as to the course of action the enemy has adopted. These conclusions might be distributed via ESD input messages and added to the intelligence summary staff working file after consultation with the G2. Pattern analysis is further defined in a later task.
- TOS assisted - The analyst assigned to manage the EOB file will establish time criteria for purging historical records from the file. The retention time will have to depend somewhat on the situation. Thus, it is recommended that the primary order of battle analyst, probably the order of battle technician, be assigned to manage the EOB file. The only other records purged from the EOB file would be suspected unit locations that have proven invalid.

OUTPUTS

The outputs of this task are TOS generalized queries, stored correlation queries, SRIIs, and ICR messages; the responses to these requests; new and

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updated ESD messages; updated EOB and staff working files; and new and updated display files.

NOTES

- "Order of battle" is typically defined as the identification, strength, command structure, and disposition of the personnel, units, and equipment of a military force.
- As with terrain analysis, time restraints will not always permit the division A&P element to wait for receipt of the corps intelligence annex before beginning their order of battle analysis. They may have to start their own analysis with whatever information exists at division. Again, like terrain analysis, division typically requires greater detail than corps to meet their mission information needs. Whereas corps typically keeps track of enemy maneuver units of regimental size and fire support elements of battalion size, division will track battalion size maneuver units and fire support batteries.
- The procedures described for order of battle analysis are not to be considered as following a strict chronological order. It is a continuous process and several steps may be taking place simultaneously.

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TOS ASSISTED TASK

ELEMENT: G2 A&P Main

FUNCTION: Produces and provides combat intelligence.

TASK: Identifies targets.

FREQUENCY ESTIMATE: Up to 25 targets per shift

CRITICALITY: 2

DUTY POSITION: Intelligence Officer, Order of Battle Technician, Order of Battle Sergeant, Intelligence Sergeant, Order of Battle Analyst

INPUTS

- TOS ESD file input messages from all sources
- TOS TER file for terrain details
- TOS EOB file for details on enemy units
- TOS graphics displays of terrain features and of the current enemy situation
- Standard indicators of the existence of certain enemy facilities such as command posts, nuclear delivery systems, logistics depots, and massed artillery as contained in published documents
- Commander's target development priorities

COORDINATION

Inputs: Division commander or his representative for the target priority list

Outputs: (See next task)

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics

PROCEDURES

- Manual - A&P personnel will receive and post the commander's target development priorities for the mission. This is typically a list showing the relative importance of the various types of targets such as nuclear and chemical delivery systems, division and regimental command posts, second echelon assembly areas, and logistical facilities.

- TOS assisted - The analyst responsible for target development will study TOS graphics displays and the contents of the EOB and TER files to determine where the enemy is most likely to locate command posts, supply areas, and other targets. For example, he might look at the current position of enemy battalions, the past history of their movements in relation to each other, and key terrain features in the area to determine the most likely locations for enemy regimental command posts. The analyst might create his own graphics display file to aid in target analysis.
- TOS assisted - The analyst will enter TOS ICR messages requesting data collection in those locations and for those types of targets determined from his analysis.
- TOS assisted - The analyst will develop and enter generalized queries, SRIs, and stored correlation queries to bring to his console ESD messages reporting enemy objects that are potential targets or activities that might indicate the presence of a target. He will designate as high priority, those SRIs which ask for data on high priority targets.
- TOS assisted - When responses to queries and SRIs are received, the analyst will draw conclusions as to whether a target exists. This process may require additional queries and graphics display analysis.

OUTPUTS

The outputs of this task are TOS ICR messages, queries, and SRIs; the responses to these data requests; and TOS graphics displays. The use of target information is explained in the next task.

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TOS ASSISTED TASK

ELEMENT: G2 A&P Main

FUNCTION: Produces and provides combat intelligence.

TASK: Coordinates target information.

FREQUENCY ESTIMATE: Up to 25 targets per shift and perhaps several interactions on a single target.

CRITICALITY: 2

DUTY POSITION: Intelligence Officer, Order of Battle Technician, Order of Battle Sergeant, Intelligence Sergeant, Order of Battle Analyst

INPUTS

- Target analysis results from the preceding task
- TOS ESD messages

COORDINATION

Inputs: G2 or assistant G2, DIVARTY, division FSE

Outputs: DIVARTY, FSE

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- File update

PROCEDURES

- Manual - Those targets developed by the analyst in the preceding task which were based on less than concrete evidence will be coordinated with the intelligence officer and perhaps the G2 or assistant G2 prior to entry into TOS.
- TOS assisted - If the target was developed through A&P analysis, a new ESD message will be entered. If it is a target decision on an existing ESD message, the target information will be added to the existing message. Information unique to ESD target messages includes an indicator that this is a target entry and a brief target description. The ESD message reliability and validity ratings must reflect the evidence and sources on which the targeting decision was made. The analyst can add clarifying information, such as estimated target life, in the message remarks entry.

- TOS assisted - When the analyst enters the target message, TOS will automatically assign a target number. The analyst should establish an SRI that reports to him any change made to target messages, thus assuring that he will be informed of the assigned target number. He can record the target number on paper along with a brief target description. He can then use the target number when discussing the target and to retrieve the message via a query on the target number.
- TOS assisted - The analyst might receive voice communications from DIVARTY or FSE requesting further information on a target. He might query the data base and use graphics displays in answering the question. His reply could be made via voice communications, an update to the TOS ESD target message, or a TOS relay message.
- TOS assisted - The analyst will receive battle damage information on targets from the FSE. This information might come via voice communications or as an update to the remarks entry of the original ESD target message. If the target is destroyed, the analyst will delete the ESD message and inform any other analyst who is interested in that target. The analyst will also delete ESD target messages when he knows the target no longer exists.

OUTPUTS

The outputs of this task are TOS SRIs and the responses to SRIs, TOS ESD messages, TOS relay messages, TOS ESD message deletions, and voice communications.

NOTES

- When the analyst enters an ESD target message it will be sent automatically to the TACFIRE system in DIVARTY and to the FSE.
- The originator of an ESD message may designate it as a target message without A&P interaction. These messages will go directly to DIVARTY and the FSE. The A&P analyst doing target analysis will also receive these messages through his SRIs. The analyst will maintain these targets like he does his own. He may coordinate with the target originator before deleting the target message from the file.

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TOS ASSISTED TASK

ELEMENT: G2 A&P Main

FUNCTION: Produces and provides combat intelligence.

TASK: Maintains an estimate of the enemy situation.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 1

DUTY POSITION: Intelligence Officer, Order of Battle Technician, Order of Battle Sergeant, Intelligence Sergeant, Order of Battle Analyst

INPUTS

- TOS ESD file input messages from all sources
- Terrain intelligence from the TOS TER file
- Order of battle intelligence from the TOS EOB file
- Documents on enemy tactics and doctrine

COORDINATION

Inputs None. Use existing data

- Outputs:
- G2 or assistant G2 to approve critical outputs
 - A&P ESD messages sent to any element or unit needing the particular intelligence data
 - Intelligence summary staff working file information available to any authorized TOS user via the query capability

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics
- File update

PROCEDURES

- TOS assisted - The analyst will establish SRIs that will bring to his console any new ESD, TER, or EOB file input that reports information useful to the analysis he is performing. He will designate some SRIs as being of high priority so that the responses to these SRIs are given processing priority.

- TOS assisted - The analyst will establish TOS stored correlation queries to bring to his console new ESD messages along with existing ESD or other file entries that have some specified relationship to the new message. For example, a correlation query might require that every time an ESD message is received reporting at least x number of tanks within some named area of interest, all existing TER file entries concerning bridges and fords within a radius of x kilometers of the tanks' location be retrieved and displayed along with the new ESD message.
- TOS assisted - The analyst will define and enter "prestored" generalized query statements for the most frequently used queries. These prestored queries can be recalled and implemented when required. The prestored query saves the analyst time that would be required to compose the same query every time it is needed.
- TOS assisted - The analyst will view the responses to his SRI and stored correlation queries at his console. He will compare the message content with the current enemy situation and terrain data as depicted on the large screen display. He will query the ESD, TER, and EOB files to retrieve data that might help clarify the new message. He might create a console graphics display of the new message and the retrieved file data to aid in his analysis. He will draw conclusions about the new message. Based on these conclusions, he might do any number of the following: write his conclusions in the ESD message remarks area; discuss the conclusions with his superior; transmit the message to some other console(s); display the message, if appropriate, on the TOS large screen display; summarize the message in the TOS intelligence summary staff working file; create and distribute an ESD message that reports the conclusions; add the information to the EOB or TER files as described in previous tasks; delete the message as described in a previous task; or simply retain the message in the ESD file for future use.
- TOS assisted - During his analysis, the analyst might uncover additional information needs. He will create and enter TOS ICR messages which describe the required information and any time limits for its collection. CM&D element personnel will receive and evaluate these messages, assigning them to appropriate intelligence collection agencies.
- TOS assisted - The analyst can create and enter special queries that will aid him in "pattern analysis." These queries will count the number of existing ESD messages that deal with some specific subject and/or events reported within some geographical area. He can also use queries to sum the contents of a particular numeric item on existing ESD messages, such as the total quantity of tanks reported in a particular named area of interest within a specified time frame. He can request that the query output be broken into time frames to give a histogram of the queried counts or sums. He can define the output format for these counts and sums and hardcopy the output for later analysis and to maintain a permanent record.
- TOS assisted - The analyst will interact with TOS in performing "event templating". A&P personnel will determine the courses of action the enemy is most likely to undertake based on the terrain, enemy order of battle, and pattern analyses described earlier. A&P personnel will then use their

knowledge of enemy doctrine and intent indicators plus TOS data on the current enemy situation to decide what future events must occur during what time periods to confirm or deny the various possible courses of action. The analyst will develop his ICR messages to collect this decisive information. His SRIs and stored correlation queries will give these messages high priority. The G2 will be notified and a high precedence ESD message generated when sufficient indicators are received to conclude the enemy's actual course of action.

- TOS assisted - The analyst will use TOS staff working files as temporary work files. For example, he might define a staff working file for storing enemy intent indicators with some means of entering when the occurrence of that indicator has been confirmed. He, or some other analyst, could periodically query the file to obtain fulfilled indicators and counts of fulfilled indicators grouped by the indicated course of action.
- TOS assisted - A&P personnel might maintain a permanent staff working file which contains a current summary of the intelligence situation in various analysis areas. Each analyst would be responsible for updating those file records which summarize his analysis areas. This file is further described in the notes section of this task description.

OUTPUTS

The outputs of this task are generalized TOS queries, stored correlation queries, SRIs, and ICR messages; the responses to these requests; new and updated ESD messages; updated EOB, TER, and staff working files; and new and updated display files.

NOTES

- The four preceding tasks dealt with those specific A&P analysis areas that can be defined as discrete entities. Their procedures are written to describe the product development in the specific analysis area. This task describes general analysis procedures under TOS that could be used to produce any product.
- "Pattern analysis" is commonly defined as a technique of analyzing and correlating a series of enemy events over a period of time for predicting future enemy trends, activities, and courses of action. It is used extensively by A&P personnel.
- "Event templating" can be defined as modeling of enemy activities related to time and specific courses of action. It assumes that the enemy must accomplish certain activities either sequentially or concurrently to undertake specific courses of action and the presence or absence of these activities indicates the adopted course of action.
- The intelligence summary staff working file suggested in this task and preceding tasks would contain an up-to-date summary of the intelligence situation. Its format could be much like that of an intelligence estimate with each record dedicated to a brief summary of a specific analysis area.

A suggested file content would use 21 records assigned as follows:

- Weather data:
- Present weather conditions
 - Mission weather forecast
 - 24-hour weather forecast
 - Light data covering the mission period
 - Estimated weather effects on friendly and enemy forces
- Terrain data:
- Cover and concealment summary
 - Observation and fire summary
 - Obstacles
 - Key terrain
 - Definition of avenues of approach
 - Estimated terrain effects on friendly and enemy forces
 - Retrieval titles and definition of contents of available terrain display files
- CI data:
- Counterintelligence summary
- Enemy Situation Data:
- Enemy unit compositions
 - Enemy unit locations and estimated combat efficiencies
 - Enemy unit capabilities summary
 - Enemy significant activities summary
 - Enemy peculiarities and weaknesses summary
 - Enemy situational vulnerabilities
 - Retrieval titles and content definitions of available enemy situation display files

Weather data would be maintained by the staff weather element and counter-intelligence data by the CI control element. All other records would be maintained by individual A&P analysts assigned to the specific analysis areas. The file would provide current intelligence information to any division TOS user simply by querying to retrieve the record(s) of interest. It should eliminate most non-A&P queries against the ESD, TER, and EOB files and many non-A&P queries against the ESD file. This would consequently reduce the SRI file management problem in the ESD file and make all three files more accessible for A&P use. File intelligence summary data would also eliminate the need for creating and distributing written intelligence summaries (INTSUM). This suggestion is predicated on the assumption that staff working files can be defined to contain tabular or free text data and that existing information can be updated without the necessity of complete deletion and reentry of a record.

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TOS ASSISTED TASK

ELEMENT: G2 A&P Main

FUNCTION: Produces and provides combat intelligence.

TASK: Responds to requests for information.

FREQUENCY ESTIMATE: (see notes)

CRITICALITY: 2

DUTY POSITION: Intelligence Officer, Order of Battle Technician, Order of Battle Sergeant, Intelligence Sergeant, Order of Battle Analyst

INPUTS

- ICT messages received from CM&D
- Voice requests for information received from G2, G3, or subordinate unit personnel
- TOS file and display data used to answer requests

COORDINATION

Inputs: Any division or corps element or unit needing division A&P information. Most requests will come through the CM&D TOS intelligence collection management function.

Outputs: Any division or corps element or unit. Most replies will be sent via TOS ESD or relay messages addressed to the requester.

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- File update

PROCEDURES

- Manual - The intelligence officer will receive voice requests for information via face to face communication, field phone, or over the intelligence radio net station in CM&D.
- TOS assisted - The intelligence officer will receive TOS ICT or relay messages containing requests for information.

- Manual - The intelligence officer will pass each request to the analyst best able to fulfill it.
- TOS assisted - If the requested information already exists, the analyst will send or show to the requester the ESD message or EOB or TER record containing the information. If the information is not in TOS, the operator may have to perform analysis as described in preceding tasks. He then will pass the results to the requester via voice communications or via TOS ESD, EOB, or TER file entries or a TOS relay message. A relay message might be used if the analyst did not want the information entered into the data base.

OUTPUTS

The outputs of this task are TOS ESD, EOB, and TER file entries and TOS relay messages. Also output are verbal responses to information requests.

NOTES

The frequency estimate for this task in the manual environment was 36 requests per shift. Under TOS, the frequency will probably change. The ability of outside users to query A&P files and to have SRIs against the ESD files might reduce the number of requests. Also, an intelligence summary staff working file should further reduce direct requests to A&P personnel. It would appear that the only requests that should remain will be for analysis that has not been accomplished. However, it is possible that the number of this type of request might actually increase under TOS if the larger amount of available combat information results in a desire for more detailed intelligence. No attempt was made here to estimate the frequency of requests under TOS.

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TOS ASSISTED TASK

ELEMENT: G2 A&P Main

FUNCTION: Manages the enemy situation data (ESD) file.

TASK: Manages the enemy situation data (ESD) file.

FREQUENCY ESTIMATE: Unknown (see notes)

CRITICALITY: 2

DUTY POSITION: Intelligence Officer, Order of Battle Technician, Order of Battle Sergeant, Intelligence Sergeant

INPUTS

- Individual TOS ESD messages
- TOS ESD summary record
- TOS SRI file
- TOS ESD file threshold alarms
- Notification of system or ESD file data overload conditions

COORDINATION

Inputs: TOS system controller for notification of data overload

Outputs: Any ESD file user

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- File update
- Attention device and threshold selection

PROCEDURES

- Manual - The analyst assigned to be the ESD file manager will coordinate with the system controller and with the enemy situation (ENSIT) data base manager to determine an acceptable maximum file size and to establish a threshold level that will alert the system controller and the file manager when the file size approaches this maximum limit. Threshold values might also be established to notify the file manager when the number of active SRIs against the file approach the maximum allowable.
- TOS assisted - The ESD file manager will define and enter automatic purge criteria based on his knowledge of ESD message types and data sources as

well as experience gained from past ESD message management problems. The automatic purge criteria will state the time intervals at which the automatic purge function should be performed and give the message age and message characteristics combinations that will mark a message for deletion at these time intervals. For example, messages whose input source is ASA might be defined for automatic purging when they have been in the ESD file for six hours while messages from SOTAS might be purged after being in the ESD file for two hours due to the more perishable nature and greater frequency of SOTAS moving target entries.

- TOS assisted - During the mission, the ESD file manager might query the ESD file to obtain counts of various types of messages or he might establish periodic summing queries to look at how the file has varied over time. Based on these queries, his knowledge of the current intelligence situation, and past experience with ESD management problems, the file manager will modify the automatic purge criteria during the mission. This might be done to accommodate varying rates of file growth, different input rates for different types of messages, and the needs of file users.
- TOS assisted - The ESD file manager will have forced to his console those ESD messages in which no TOS user has interest. This lack of interest is defined as when all message addressees and those with SRIs out against a message have seen it and the interest item on the message is set to no. When this happens, the file manager might retrieve the entry for this message from the ESD summary record to see who has seen the message. He could, if time permits, ask those who have seen the message if they are still interested. He will either delete the message or set its interest item to yes to retain it.
- TOS assisted - During the mission the file manager might receive automatic notification that the ESD file size threshold value has been reached. If the situation is critical, he might define and enter criteria for immediate purging of messages based on age and message characteristics as was done for automatic interval purging. However, he might request that he be shown the actual messages or a summary of the messages that meet these criteria rather than have them automatically deleted. He then can assess the impact the purge will have and may remove specific messages from deletion or modify his purge criteria prior to execution.
- TOS assisted - During the mission, the file manager might receive automatic notification that the ESD active SRI threshold value has been reached. He might then query the SRI file and retrieve a list of the active SRIs against the file. Using his knowledge of user needs and the specific SRI statements, he would determine which SRIs might be deleted and coordinate their deletion with the SRI originators.

OUTPUTS

The outputs of this task are TOS queries and the responses to those queries, purge criteria and the message deletions resulting from the purge criteria, and individual ESD message deletions.

NOTES

- There are no data on which to base a frequency estimate for ESD file management activities. The frequency will clearly vary depending on the number and types of ESD inputs.
- Much of ESD file management will actually be accomplished by all A&P analysts through their comparing and deleting of redundant messages as described in the first A&P task.
- The limits and selected thresholds for ESD file size and number of allowable SRIs are very critical under the current TOS design. Once the ESD file reaches its allowable size, as set in TOS, no further file entries will be processed. Once the number of active SRIs against the ESD file reaches its allowable number as set in TOS, no further ESD SRIs will be processed.
- It is currently envisioned that the ESD summary record mentioned in this task will contain a list of all messages in the file by message number and originator code and indicate which positions are interested in the message and which positions have seen it.
- Standing operating procedures should be established requiring ESD file users to, when time permits, review those ESD messages in which they have interest set and set the interest to "no" for those messages they no longer require. This might be done by retrieving from the ESD summary record those message numbers in which the user has interest set, reviewing individual messages as required, and deleting interest indications from the summary record as appropriate. Similar procedures should be established requiring individual users to review their outstanding SRIs by querying the SRI file and then deleting those which are no longer needed.
- Management of the TER and EOB files was discussed in the tasks on terrain analysis and enemy order of battle analysis, respectively. File management of these two files is not as big a problem as managing the ESD file. TER file management should consist primarily of deleting entries for terrain features that are no longer in the division's area of operations. EOB file management should consist primarily of deleting historical records when they reach a certain age or when they are no longer of value in analyzing enemy intentions.

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TOS ASSISTED TASK

ELEMENT: G2 A&P Main

FUNCTION: Assigns management tasks and performs ENSIT data base management.

TASK: Assigns management tasks and performs ENSIT data base management.

FREQUENCY ESTIMATE: Unknown (see notes)

CRITICALITY: 2

DUTY POSITION: Intelligence Officer, Order of Battle Technician

INPUTS

- Receipt of total number of SRIs permissible against all ENSIT data base files as determined by the system controller
- Changes in A&P personnel duty assignments due to changes in the workload or the temporary absence of one or more individuals
- Notification by a TOS user of the desire to add or delete a position to the list of those authorized to read and/or write the ESD, EOB, or TER file or to change the authorizations of existing authorized positions
- TOS SRI, ESD, EOB, and TER files

COORDINATION

- Inputs:
- System controller for ENSIT data base SRI allotments
 - Any TOS user requesting access authorization to any ENSIT data base file
- Outputs:
- System controller for notification of A&P position-to-console assignments and changes to ENSIT files authorizations
 - Any TOS user for notification of acceptance or rejection of file authorization request

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access

PROCEDURES

- Manual - The system controller will be notified of the desired initial assignment of positions to specific A&P consoles and will be notified of any desired changes to these assignments during mission conduct. The system controller will enter the position/console associations in TOS.

- Manual - The ENSIT and friendly unit situation (FRENSIT) data base managers will confer with the system controller to determine the total number of active SRIs which will be allowed against each data base at any given time. The ENSIT data base manager will then confer with the ESD and TER file managers to determine how to proportion the ENSIT data base SRI allotments between the two files. The system controller will then be notified of the file allotments.
- Manual - The division intelligence elements will inform the ENSIT data base manager of their TOS staff working file requirements including the purpose, approximate size, and approximate frequency of use for each proposed staff working file. The ENSIT data base manager will approve or disapprove the file based on its utility compared with its probable effects on TOS operations.
- TOS assisted - TOS equipped elements and units will notify the ENSIT data base manager of their desire to add, delete, or modify the authorization of a position(s) to read and/or write in one or more of the ENSIT data base files and the reasons why authorization is desired. The ENSIT data base manager might confer with the managers of the affected files to get their opinions as to whether the authorization is justified. They might retrieve from TOS a list of the positions currently authorized and their authorization level to aid in making the determination and to estimate the effects on the file. The system controller will be notified of any approved changes in authorization so they can make the changes in TOS. The requesting party will be notified regardless of the decision.
- TOS assisted - The ENSIT data base manager might periodically query the SRI file, the ESD summary record, the authorization list, and the ESD, EOB, and TER files as aids in monitoring the status of ENSIT data base files.

OUTPUTS

The outputs of this task are TOS queries and responses to those queries. Also output are verbal communications concerning decisions and requests.

NOTES

- ENSIT files are here defined as those which should logically be managed by the A&P element because they will be the primary file users. These files include the ESD, EOB, and TER files. The files used by the intelligence collection management function should be managed by CM&D apart from the ENSIT files. The intelligence collection management files should not be difficult to manage as there would appear to be no need for allowing SRIs against them and the authorized users should be limited and stable.
- There are no data by which to estimate the frequency with which any part of this task will be performed. Unlike file management, its frequency will probably vary more as a result of individual division operations center organizations than as a result of battlefield conditions.

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PERSONNEL

TABLE 6.
A&P Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
Intelligence officer	03	35A	1	03/02	35A	2
Order of battle technician	W0	964A	2	W0	964A	2
Order of battle sergeant	E7/E6	96B	2	E7/E6	96B	2
Intelligence sergeant	E5	96B	2	E5	96B	2
Order of battle analyst	E5/E4	96B	<u>2</u>	E5/E4	96B	<u>2</u>
Total Officers/Enlisted Men			3/6			4/6

This table depicts the manning a division might employ to sustain 24-hour operations in a tactically deployed manual element and the manning proposed for the element to sustain 24-hour operations using TOS. The recommendations do not provide for relief or replacement personnel.

It is difficult to determine the "doctrinal" manning for a division A&P element in the tactical situation. The entire A&P staff could come from combat intelligence company augmentation which would be allotted according to the G2's desires. The "doctrinal" manning contained in the table actually represents a best guess of which combat intelligence company augmentation positions for the main command post would typically be assigned to the A&P element. For comparison, the division from which manual operations data were collected typically uses six 96Bs, which matches the doctrinal determination, but they are lower in rank than shown above. The investigated division also has two officers assigned with 35A MOSs and 03 and 02 ranks, but no warrant officers. The decision that a doctrinal organization would have only one intelligence officer assigned was an arbitrary one based on the assumption that the two

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doctrinally available warrant officers supervise the detailed operation of the element and the officer provides command direction, approves outputs, and interacts with the G2 and other TOC sections in the main command post.

The A&P element will have four TOS consoles, a large screen display device with console, and its own terminal control unit dedicated for its use. This TOS equipment will be used to store data, perform analysis, create and view situational graphics displays, disseminate intelligence products, and monitor and control the ENSIT data base files.

It is recommended that each 12-hour A&P shift under TOS consist of an intelligence officer, an order of battle technician, and three enlisted men. An intelligence officer is recommended for each shift primarily to provide continual management of the TOS ENSIT data base and to control element operations. However, the intelligence officer and every other crew member must be capable of using all the TOS capabilities and files necessary to perform in any intelligence analysis area. Specialization would greatly reduce the element's ability to react to changing analysis demands. However, focalized assignments are recommended in two areas. It is recommended that the intelligence officer be the ENSIT data base manager with backup by the order of battle technician. This is recommended because the data base manager must make decisions that affect other elements and must have the authority to do so. The only other assignment recommendation is that the order of battle analyst, or whoever is the lowest ranking enlisted man, operate the large screen display device console. The primary duty at this console would be to maintain the current large screen displays. Having the lowest ranking individual perform this duty would free the more experienced personnel for analytical work. The overview of TOS operation section of this A&P description contains some possible positional organizations of the TOS consoles assigned to A&P.

RECOMMENDATIONS

Change the ESD message filter function to permit "redundancy" checking of all incoming ESD messages.

The current design of the ESD message filter function requires entry of specific values for subject, activity, location, agency, and/or source. The operator then enters the relative criteria by which incoming messages having the specified item entries will be determined to be redundant. These redundant messages can either be deleted automatically or displayed to the operator along with their related messages from the ESD file. The design thus limits redundancy checking to those incoming messages that contain specific information as specified by the operator.

It is recommended that the requirement to identify specific messages for filtering be dropped and that only the specification of relative criteria be

required. For example, the operator might create a filter parameter set which identifies any incoming message as redundant with an existing one if the subject and activity are the same, the location is within a radius of 400 meters, and the event time is plus or minus five minutes. This would require that all incoming messages go through a redundancy check. Any combination of messages that meet the criteria would be displayed to the operator who could combine the information in one message and delete the "redundant," or confirming, messages as suggested in a preceding A&P task description.

The justifications for this recommendation are as follows:

- The requirement to specify specific message content for filtering appears to make it almost mandatory that each analyst create and maintain his own "filter sets" and alter and add to them frequently. This is true because it would seem that only the individual analyst will be able to keep up with his own changing requirements. Under this recommendation, one analyst could be assigned to do all the filtering because the relative criteria would apply to all incoming messages and not require constant adaptation.
- Regardless of how tasks are allotted in any given A&P element, there will be some incoming ESD messages that will be of immediate interest to more than one analyst. If each analyst maintains his own filter sets, then, conceivably, one analyst could be deleting an incoming message while another is adding to it.
- Under this recommendation the position assigned to filtering could easily control the filtering criteria. For instance, using the filter parameter set example mentioned above, the operator could tighten the location and time requirements if he starts to get a backlog of filter responses or too many unique reports are showing up in filter responses. If it becomes obvious that many "redundant" messages are not correlating in the filter process, the operator might delete the activity criterion or widen the location and time criteria.
- A possible side benefit of this recommendation would be if the operator were able to create a second filter parameter set that would automatically delete identical messages. These might be defined as ESD add messages with the same subject, activity, location, event time, agency, and source. To avoid unnecessary processing time, it would be implemented only if receipt of duplicate messages from the same source becomes a problem.

It might be argued that redundancy checking of all incoming ESD messages would require too much processing time. Some of this time might be gained back because the need to check each incoming message against many different filter sets would be eliminated. A possible solution to the processing time problem might be to make the filter function as recommended above an option selectable via some simple entry such as being hardwired to a specific keyboard switch. Although this would eliminate the necessity of creating individual "filter sets," it would require either that each analyst do his own filtering or that all incoming messages be displayed at one console with the resulting problems described earlier.

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Have TOS automatically sum enemy personnel and equipment losses, based on ESD input messages, and calculate combat efficiency percentages.

Under the current TOS design, an analyst will have to establish SRIs and queries to retrieve ESD messages that report enemy losses. He then will eliminate duplicate reports through queries, correlation requests, or filter requests and individual analysis. He will attempt to assign the resulting filtered losses to a particular enemy unit through correlation requests or queries to the EOB file, studying of the TOS enemy situation display, and individual analysis. He then will sum the assigned losses with other losses assigned to that unit. These figures could be recorded on paper or in a TOS staff working file. He will subtract this sum from the doctrinal strength for that type of unit to obtain the unit's current estimated combat strength. He will calculate the unit's combat effectiveness percentage by dividing the current strength estimate by the doctrinal strength. Lastly, he will record this percentage in the EOB file record for that unit.

It is recommended that TOS perform these calculations. Doctrinal strengths for each type of enemy unit would be prestored and automatically assigned to specific units as their types were identified in the EOB file. The operator would override these values if a given unit was known to be at less than doctrinal strength when identified. The operator would establish filter criteria for ESD messages that report enemy losses. When such ESD messages come in, they would automatically be compared with already used enemy loss reports and not considered further if they meet the redundancy criteria. Borderline cases might be presented to the operator for a redundancy decision. The location of acceptable reports would be automatically compared with current enemy unit locations in the EOB file. Again, borderline cases could be presented to the operator for assignment. The losses would be automatically subtracted from the current strength figure for the unit to which they were assigned. A new combat efficiency percentage for that unit would be automatically calculated and entered in the EOB file. Threshold levels could be set to notify the operator when a unit's combat efficiency reached some critical value. At anytime, the operator could call up a summary of the doctrinal strengths, reported losses, and current strength estimates for any given unit. He could override the figures if desired. The operator could also add reinforcements to the summary which would probably be estimated through analysis rather than ESD messages. The justifications for this recommendation are as follows:

- It would greatly reduce the human requirements for what is essentially a mechanical process of summing enemy losses and resulting enemy strength.
- It would allow a more rapid and continuous calculation of enemy strength than is possible under a manual system.

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Develop an expandable intelligence analysis package for TOS.

The current TOS design does not contain any algorithmic routines that will "analyze" data and produce conclusions concerning enemy objectives and probable courses of action. The current TOS aids to intelligence analysis are pretty much limited to storing data and accessing the stored data in varying fashions to produce displays and printouts.

It is recommended that a limited analysis package be developed for TOS and that its capabilities be refined and expanded based on user acceptance and recommendations, empirical data, and experimentation. The first analysis package should involve deriving a set of conclusions that require consideration of a large mass of data but, once the data is known, relatively few factors need to be considered in reaching conclusions with high validity. Some analysis areas that might prove to be candidates for a limited analysis package are:

- Movement analysis. This software routine would take an incoming ESD report whose activity is one of movement and use the subject, location, movement direction, and quantity entries of the report to conclude: the enemy unit the moving object(s) belong to; the object(s) relative position within the unit; probable traffic points along its path such as bridges or ford crossings or obstacles; enemy unit that the object is moving to reinforce, if any; and the friendly unit that the enemy object is moving to engage, if any. Data from the EOB, TER, ESD, and TD files would be used to arrive at these conclusions. The only data apparently needed that is not currently envisioned for inclusion in TOS is the doctrinal kinds of equipment and strengths for various types of enemy units that could be used to aid in determining the parent unit of the object(s). The advent of SOTAS might make this a particularly useful analysis tool.
- Order of battle analysis. This software routine would take the EOB file current and historical records for designated enemy units and use their relative positioning through time to conclude: for each designated unit, whether it is committed or reinforcing; unit boundaries; which designated units are attached to the same parent organization; and the most probable enemy courses of action based on order of battle. Data from the EOB and TER files, and perhaps the TD file, would be used to derive these conclusions. Development of the algorithms would require enemy tactical doctrine information.
- Limited pattern analysis. This software routine would take some limited area(s) of enemy activity, other than order of battle, and use ESD file entries concerning that activity to predict the enemy's intentions. Some possible activity areas might be counterintelligence, artillery movements and placement, or engineering activity. The ESD file would be the primary source of data, but the EOB or TER files could be used extensively depending on the area chosen. Again, development of the algorithms would require enemy tactical doctrine information.

- Target analysis. This software routine would use data from the EOB, ESD, and TER files to predict the location of enemy targets such as command posts and supply areas. Development of the algorithms would again require enemy tactical doctrine information.

The package could be used in division exercises and data could be gathered from the exercises to evaluate the package's effectiveness and utility. Comments and recommendations should be solicited from the package users. Based on this information, the algorithms would be refined and the analysis capabilities expanded into other areas with a repeat of the evaluation procedures. Eventually, TOS would have an intelligence analysis capability which has the user's confidence and meets the user's needs. The justifications for these recommendations are:

- Although the current TOS design gives the A&P analyst capabilities for manipulating and sorting data, the analysis of the data remains a manual task. It would appear difficult for an analyst to determine all the data that should be retrieved relating to a specific analysis problem. It would appear more difficult for an analyst even to consider, let alone weigh, all these data when deriving conclusions. Automatic routines, if carefully designed and validated, should be able to evaluate larger volumes of data and consider more relationships than the analyst can and thus produce more valid conclusions in certain analysis areas. However, the machine at times will be more easily deceived than the analyst, especially by novel tactics, because the machine must use standardized algorithms in deriving conclusions. For this reason, the output of any intelligence analysis routine should include some statement of the basis for the conclusions so human judgment can evaluate the validity of the conclusions.
- The speed with which a modern army can execute its mission makes it imperative that the enemy's intentions be ascertained at the earliest possible time. Well designed and validated routines should be able to estimate the enemy's intentions faster than the analyst.
- The reasons for recommending an incremental approach to introducing intelligence analysis into TOS are to increase user acceptance, guarantee user interaction in the design, and use the experience gained with previous analysis packages to avoid design errors in later packages.

ARMY SECURITY AGENCY TACTICAL SUPPORT ELEMENT

GENERAL

The Army Security Agency tactical support element (ATSE), supervised by a signal intelligence officer, is part of the Army Security Agency (ASA) division support company which provides signal intelligence and electronic warfare support to the division. Presently, all ATSE operations are performed in the all source intelligence center van in the main command post tactical operations center. Under TOS, it is recommended that the ATSE be divided between two locations. The EW officer and an assistant would remain in the main command post tactical operations center to coordinate division EW activities with the G3 element. It is recommended that the remainder of the ATSE be relocated to the division control and analysis center (DCAC), also known as the ASA division support company operations center. This center coordinates the EW and signal intelligence activities of ASA field teams and performs technical analysis of signal intelligence results reported by the field teams. The DCAC will have a TOS console and thus most of the normal ATSE coordinating activities will logically be performed at the DCAC. The ATSE description contained in this section reflects this recommended split location of the element.

It should be noted that this analysis did not include an investigation of the present DCAC. Thus, no attempt is made to describe DCAC operations other than those ATSE tasks which are recommended for performance at the DCAC.

MISSION

The mission of ATSE is to coordinate the flow of EW and signal intelligence information between the DCAC and the G2 and G3 elements in the main command post tactical operations center.

OVERVIEW OF TOS OPERATIONS

ATSE personnel at the DCAC will use the TOS console to receive ICT messages from the G2 CM&D element and to input and disseminate ESD file messages that report the results of ASA intelligence collection and analysis. The console will also be used to retrieve data from the TOS data base useful in keeping up with the battlefield situation, to aid in making decisions, and to aid in the analysis of ASA field team reports. In addition, DCAC ATSE personnel will use the TOS console to enter the operational status and location of ASA field teams.

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ICT messages sent to the DCAC ATSE will be those requesting information that can be collected by ASA signal intelligence assets. ATSE personnel will translate these general requests into specific signal indicators which will be used in tasking ASA field teams.

DCAC ATSE personnel will keep abreast of the current enemy and friendly situation by using TOS console graphics displays of enemy and friendly unit locations and significant events. They will establish SRIs and queries that will retrieve data from the ESD, EOB, TER, and TD files relating to pertinent aspects of the current situation. They will also use their knowledge of the current situation derived from these displays and files in formulating their own tasking for ASA field teams.

DCAC ATSE personnel could use console graphics displays and data from the ESD, EOB, and TER files to aid in analyzing incoming ASA field team reports. They could compare the reported information with the current situation to see how it tracks with other events. They might query the TOS files to search for information from other sources to substantiate the report and help in determining what additional information might be collected to further confirm the report. DCAC ATSE personnel might also use these TOS aids to help in determining if the enemy is employing new EW or signal intelligence equipment or tactics.

DCAC ATSE personnel will compose and transmit TOS ESD file input messages containing the analyzed results of ASA field team reports. They will coordinate with the special security element to assure that no special intelligence information is entered in TOS.

The current and projected operational status and location of ASA field teams will be extracted from field team reports and entered in the TOS ICA file by DCAC ATSE personnel. They will also update, as required, the TOS ICC file to reflect the capabilities and operating characteristics of any new ASA signal intelligence equipment. The ICA and ICC files will be used by the TOS intelligence collection management function in automatically selecting the best assets to task for a given collection request. DCAC ATSE personnel might also be responsible for maintaining the current location of jammer-equipped ASA field teams in the G3's tactical dispositions file.

When the DCAC moves, ATSE personnel will prepare the TOS console for transport and perform the hookup and checkout at the new location.

TOS, as currently envisioned, will not be directly involved in the technical signal and communications analysis performed at the DCAC. TOS also will not be used in any way in the communications between the DCAC and the ASA field teams. The DCAC has its own systems for performing these tasks. The passing of detailed status and directive information between the DCAC ATSE and the EW officer in the tactical operations center will be via non-TOS communications as this interaction requires a dialogue capability.

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The ATSE EW personnel assigned to the main command post tactical operations center will use TOS in a manner similar to the DCAC ATSE personnel to keep abreast of the current situation and to aid in developing EW mission recommendations. However, ATSE EW personnel are not expected to operate a TOS console. They should be able to use existing TOS large screen graphics displays to aid them and should be able to request additional TOS outputs through regularly assigned TOS console operators.

TOS will not be used to prepare or transmit EW plans and reports such as the OPOD EW annex, EW mission execution reports, or MIJI recap reports. These documents are considered too lengthy for TOS transmission. Also, the inputs to these reports are not expected to be contained in TOS and the latter two reports, which are sent to corps, are not critical enough to warrant TOS interaction.

TOS is not expected to be involved in the coordination of EW missions between the G3 element, ATSE EW personnel, DCAC, and ASA field teams. This coordination requires the flexibility of verbal communications. Also, TOS will not be used by ATSE EW personnel to process or evaluate meaconing, intrusion, jamming, and interference (MIJI) reports. There is no format currently envisioned for TOS to handle this relatively involved report and other means are available for reporting jamming which will move through the command system much faster than the MIJI. The MIJI analysis required of ATSE EW personnel is simply to determine if any friendly EW missions were being conducted that might have caused the interference. EW mission data is not expected to be contained in TOS and the MIJI analysis requires the flexibility of verbal communications between the communications-electronics (C-E) officer, EW officer, and DCAC personnel.

FUNCTIONS AND TASKS

Functions and tasks performed by the ATSE element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 7.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 7.
ASA Tactical Support Element Positions, Functions,

FUNCTIONS AND TASKS	Signal Intelligence Officer	EW Officer	Liaison Sergeant
Directs the division signal intelligence activities.			
Directs ASA field team activities.	(X)		
Receives, analyzes, processes, and disseminates incoming ASA field team reports.	(X)		
Assists in preparation of EW plans and reports.			
Provides the EW annex to the OPORD and EW inputs for the commander's briefing.		X	
Provides EW summary report.		X	X
Coordinates division EW operations.			
Recommends EW tasking for ASA assets.		(X)	(X)
Uses and coordinates EW resources in conjunction with operational requirements.		X	X
Coordinates on/off electronic countermeasures control procedures as required for planned and ongoing operations.		X	X
Advises on enemy EW and signal intelligence operations.			
Determines enemy EW and signal intelligence capabilities.	(X)		
Assists the G2, SIGSEC, and C-E elements in evaluating MIJI incidents.		X	X

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es, and Tasks

Senior SIGINT Analyst	Senior Signal Analyst	Senior Traffic Analyst	Signal Analyst	Traffic Analyst
-----------------------------	-----------------------------	------------------------------	-------------------	--------------------

(X)

(X)

(X)

(X)

(X)

(X)

(X)

(X)

X

(X)

(X)

(X)

(X)

X

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TABLE 7: (Continued)
ASA Tactical Support Element Positions, Functions

FUNCTIONS AND TASKS	Signal Intelligence Officer	EW Officer	Liaison Senior
Disseminates status of ASA signal intelligence and EW assets.			
Performs the hookup, energizing, initialization, and checkout of the TOS console.			
X - Manual Task			
(X) - TOS Assisted Task			

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(inued)

Functions, and Tasks

Liaison
Sergeant

Liaison Sergeant	Senior SIGINT Analyst	Senior Signal Analyst	Senior Traffic Analyst	Signal Analyst	Traffic Analyst
---------------------	-----------------------------	-----------------------------	------------------------------	-------------------	--------------------

(X)

(X)

(X)

(X)

(X)

(X)

(X)

(X)

X

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TOS ASSISTED TASK

ELEMENT: G2 ATSE DCAC

FUNCTION: Directs the division signal intelligence activities.

TASK: Directs ASA field team activities.

FREQUENCY ESTIMATE: DCAC receives new tasking from CM&D about hourly and tasking interactions between DCAC and field teams will be much more frequent

CRITICALITY: 2

DUTY POSITION: Signal Intelligence Officer, Senior SIGINT Analyst, Senior Signal Analyst, Senior Traffic Analyst, Signal Analyst, other DCAC personnel

INPUTS

- EEI contained in the mission OPORD intelligence annex
- ICT messages received from CM&D
- TOS graphics displays and file contents
- Documentation on enemy EW, communications, and signal equipment characteristics
- Friendly signal intelligence equipment status as maintained on acetate chart
- Experience in associating tasking requirements with specific signal indicators

COORDINATION

Inputs: CM&D

Outputs: ASA field teams

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Graphics

PROCEDURES

- Manual - ATSE personnel will receive a copy of the mission OPORD intelligence annex containing mission EEI statements. They will decide which of the EEI might be fulfilled by ASA assets. They will then develop the signal indicators for each selected EEI using documentation on enemy communications and signal equipment characteristics and electronic order of battle as well as

their personal knowledge and experience. These signal indicators will be sent to ASA field teams as a classified appendix to the intelligence annex. This appendix comprises the original tasking for a new mission.

- TOS assisted - During the mission, DCAC ATSE personnel will receive ICT messages on the DCAC TOS console. These tasking messages will originate at the CM&D console and will contain a statement of the information required, the request originator's identification, the request number, and clarifying information such as request priority and time limits for responding. The ICT messages will be hardcopied for journal maintenance and for later use in responding to them. The request originator might be contacted via voice communications to gather additional information if required. DCAC ATSE personnel will manually translate the tasking into signal indicators that list the signal and communications characteristics of the type of enemy activity, equipment, installation, or unit in the tasking message. These indicators will be used to task ASA field teams. The tasking will be done via ASA internal communications means.
- TOS assisted - DCAC ATSE personnel might use their TOS console during the mission to keep abreast of the current enemy situation, using this information to formulate their own ASA tasking. They might maintain a graphics display of the known enemy unit locations using the EOB file or an A&P generated display file. They might establish SRIs and queries against the ESD file to retrieve data useful in determining the most likely locations for certain enemy installations or activities. Based on these TOS data and reports from ASA field teams, DCAC ATSE personnel will formulate their own tasking for ASA field teams.

OUTPUTS

The TOS outputs of this task are SRIs and queries, the responses to these, and graphics displays. The primary outputs are signal indicators sent as tasking to ASA field teams via non-TOS communications.

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TOS ASSISTED TASK

ELEMENT: G2 ATSE DCAC

FUNCTION: Directs the division signal intelligence activities.

TASK: Receives, analyzes, processes, and disseminates incoming ASA field team reports.

FREQUENCY ESTIMATE: Four ESD messages output per hour

CRITICALITY: 2

DUTY POSITION: Signal Intelligence Officer, Senior SIGINT Analyst, Senior Signal Analyst, Senior Traffic Analyst, Signal Analyst, Traffic Analyst, and other DCAC personnel

INPUTS

- Incoming ASA field team reports
- DCAC non-TOS files and displays to compare against new reports
- TOS files and displays to compare against new reports
- Hardcopy of TOS ICT messages

COORDINATION

Inputs: ASA field teams

Outputs: ● Special security element
● Any addressee on the ESD input message
● Any user of ASA inputs to the ESD file

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update
- Graphics

PROCEDURES

- Manual - DCAC personnel will receive spot and mission reports from ASA field teams via non-TOS communications. They will record the report in the journal and compare it with other reports to make sure it does not contradict them.

- TOS assisted - DCAC ATSE personnel might use TOS graphics displays of the current situation to compare against the new report. They might query the ESD and EOB files to look for related information.
- Manual - DCAC personnel will perform any required technical analysis of the reported data. This analysis is performed to determine the origin and meaning of intercepted signals and communications.
- TOS assisted - DCAC ATSE personnel will compose and transmit an ESD input message containing the analyzed information. They will check the report information to see if it answers any of the tasking received from CM&D via ICT messages as described in the preceding task. If it does, they will include the ICT message number in the ESD message and include the ICT message originator as an addressee on the ESD message. They will use other addressees in accordance with standing operating procedures or their own personal knowledge of who might require the information. The text and source of the message will have to be "sanitized" before entry into TOS to remove any special intelligence data. DCAC ATSE personnel will confer with special security element personnel to assure that all special intelligence material is removed.

OUTPUTS

The outputs of this task are TOS queries, the responses to those queries, TOS graphics displays, and TOS ESD input messages.

NOTES

The degree to which DCAC ATSE personnel will use TOS file data to evaluate new field team reports will depend on the relationship between the DCAC and A&P in any given division. The comparison of new inputs with inputs from other sources is typically performed by A&P personnel.

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MANUAL TASK

ELEMENT: G2 ATSE Main

FUNCTION: Assists in preparation of EW plans and reports.

TASK: Provides the EW annex to the OPORD and EW inputs for the commander's briefing.

FREQUENCY ESTIMATE: Presently, commander's briefings are given twice daily. A revised EW annex is produced when the mission changes, maybe every three days.

CRITICALITY: 1

DUTY POSITION: EW Officer

INPUTS

- Corps EW annex
- Documents on enemy EW, communications, and signal equipment characteristics
- Friendly EW equipment status as maintained on an acetate chart
- EW significant events as maintained on an acetate chart
- Personal experience of the EW officer

OUTPUTS

- Completed EW annex containing enemy capabilities and vulnerabilities, summary of enemy EW activities to date, summary of friendly assets and capabilities, and proposed tasking
- The same types of information in note form provided to the G3 or assistant G3 for the commander's briefing

COORDINATION

Inputs: None. Use existing data.

Outputs: G3, Assistant G3

NOTES

- The signal intelligence appendix to the OPORD was discussed in a preceding task.
- This task does not qualify for TOS interaction. None of the OPORD annexes will be stored in or transmitted via TOS due to their size and essentially free text nature. Also, none of the inputs to this task are expected to be obtained via TOS.

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MANUAL TASK

ELEMENT: G2 ATSE Main

FUNCTION: Assists in preparation of EW plans and reports.

TASK: Prepares EW summary reports.

FREQUENCY ESTIMATE: EW mission execution report reporting frequency determined by corps; MIJI recap required every 24 hours

CRITICALITY: 3

DUTY POSITION: EW Officer, Liaison Sergeant

INPUTS

EW mission execution report

- Spot reports on particular EW missions received from DCAC via non-TOS communications. These include situation reports and position effectiveness reports that give targets, total times, and mission effectiveness estimates.
- Operator logs from jamming teams showing what particular actions the jamming operator took at what time.

MIJI recap

Copies of all MIJI reports received during the past 24 hours plus their resolutions.

OUTPUTS

- EW mission execution report containing a summary of what every EW mission accomplished during the reporting period.
- MIJI recap report summarizing all MIJI reports received in the past 24 hours, their resolutions, and recommendations

COORDINATION

EW mission execution report

Inputs: • DCAC
 • ASA field units

Outputs: • Corps ATSE
 • Division G3

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MIJI recap

Inputs: None. Use existing data.

Outputs: • Corps ATSE
• Division G3

NOTES

This task does not qualify for TOS interaction. None of the inputs are expected to be contained in TOS and the outputs should be too lengthy to be transmitted via TOS. Also, the outputs are not urgent enough to require TOS transmission.

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TOS ASSISTED TASK

ELEMENT: G2 ATSE Main

FUNCTION: Coordinates division EW operations.

TASK: Recommends EW tasking for ASA assets.

FREQUENCY ESTIMATE: Unknown

CRITICALITY: 2

DUTY POSITION: EW Officer, Liaison Sergeant

INPUTS

- Large screen displays of friendly and enemy situation
- TOS file data
- Information on enemy electronic situation and friendly EW equipment status from DCAC personnel
- Personal knowledge and experience

COORDINATION

Inputs: • DCAC
 • A&P
 • G3

Outputs: G3

MAN/MACHINE INTERFACE REQUIREMENTS

Graphics

PROCEDURES

- TOS assisted - ATSE EW personnel will study the TOS large screen displays of the friendly and enemy unit locations and activities. They will analyze hardcopy of ASA ESD file inputs that describe the enemy's electronic order of battle and enemy equipment capabilities. They might request that A&P or G3 console operators create graphics displays or retrieve data that will aid in their analysis of the enemy's EW vulnerabilities and activities.
- Manual - They will confer with DCAC personnel via non-TOS communications to obtain further information on the enemy's electronic environment and the status of friendly EW equipment. They might also receive advice from DCAC on the best employment of EW equipment.

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- Manual - The EW officer will make written or verbal recommendations to the G3 concerning possible EW missions in support of operations.

OUTPUTS

The outputs of this task are verbal or written recommendations for ASA EW missions.

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MANUAL TASK

ELEMENT: G2 ATSE Main

FUNCTION: Coordinates division EW operations.

TASK: Uses and coordinates EW resources in conjunction with operational requirements.

FREQUENCY ESTIMATE: Unknown

CRITICALITY: 2

DUTY POSITION: EW Officer, Liaison Sergeant

INPUTS

- DCAC situation reports and position effectiveness reports used to keep abreast of ASA operations and status
- EW mission tasking received from the G3
- Restricted frequencies chart used to determine frequencies that can not be jammed

OUTPUTS

EW tasking message sent to the DCAC via non-TOS communications

COORDINATION

Inputs: G3

Outputs: DCAC

NOTES

- If there is a conflict between signal intelligence and EW tasking, then the three principals decide together what the priorities are. For instance, the G3 might request an EW task. The EW officer looks up the frequency on the restricted frequency chart and finds it is "guarded" for intelligence data collection purposes. They must get together with the G2 to resolve the conflict.
- For EW tasking, the G3 passes a generalized verbal task stating who, where, and when. The EW officer or liaison sergeant then determines what jamming team is in the area and what is its EW equipment's current mission and operational status. He then drafts the EW tasking message sent to DCAC which states the enemy units they want jammed, the jamming duration, the mission

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control, and when the results are needed. DCAC personnel then translate this into very specific tasking messages for individual ASA jamming team locations.

- This task does not qualify for TOS interaction. EW tasking messages could be sent via TOS relay messages but TOS is not the fastest means of communication nor does it have the flexibility of verbal communications to permit discussion of the mission.

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MANUAL TASK

ELEMENT: G2 ATSE Main

FUNCTION: Coordinates division EW operations.

TASK: Coordinates on/off electronic countermeasures control procedures as required for planned and ongoing operations.

FREQUENCY ESTIMATE: Anytime jamming is required

CRITICALITY: 2

DUTY POSITION: EW Officer, Liaison Sergeant

INPUTS

EW tasking message

OUTPUTS

Notification to the DCAC or jamming team to start or stop jamming or communications check over the electronic countermeasures control radio frequency

COORDINATION

Inputs: None, use ATSE-created EW tasking message.

Outputs: DCAC or jamming team

NOTES

- Jamming on/off control is accomplished by using a dedicated radio frequency to pass voice control orders. The net is opened 10 minutes prior to the start of the jamming mission and communications checks are made every 10 minutes during the mission. If two consecutive communications checks are missed, the jamming team is supposed to stop jamming. The net is closed when the mission is over or after an emergency stop jamming message is sent.
- This task does not qualify for TOS interaction. It is a coordination task requiring verbal interaction.

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TOS ASSISTED TASK

ELEMENT: G2 ATSE DCAC

FUNCTION: Advises on enemy EW and signal intelligence operations.

TASK: Determines enemy EW and signal intelligence capabilities.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 1

DUTY POSITION: Signal Intelligence Officer, Senior SIGINT Analyst, Senior Signal Analyst, Senior Traffic Analyst, Signal Analyst, Traffic Analyst, and other DCAC personnel

INPUTS

- Documentation on enemy EW, communications, and signal equipment characteristics and capabilities
- Reports received from ASA field teams that may indicate new enemy EW or signal intelligence uses or capabilities
- Reports of new enemy capabilities or activities received from corps
- TOS graphics displays and ESD, EOB, and TER file data to aid in analyzing the enemy's EW and signal intelligence usage
- Personal knowledge and experience of ATSE personnel

COORDINATION

Inputs: None. Use existing data.

- Outputs:
- ASA field team
 - G3 element
 - G2
 - EW officer
 - Corps ATSE
 - Any user of ASA inputs to the TOS ESD file

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Graphics
- File update

PROCEDURES

- TOS assisted - During the technical analysis of ASA field team reports, DCAC personnel might discover an enemy communications, signal, or EW capability that has not been identified before, or an employment of known equipment that has not been used before. DCAC ATSE personnel might retrieve or create TOS console graphics displays that show the spatial relationships among enemy EW, communications, and signal equipment placements and the units they support. They might also establish SRIs and queries against the ESD, EOB, and TER files to gather additional data for the analysis. DCAC personnel might also receive reports from the corps ATSE that describe new enemy equipment or employment tactics.
- TOS assisted - When DCAC ATSE personnel are reasonably certain of the validity of a new enemy electronic capability or employment, they will report it via a TOS ESD file input message addressed to any party who they feel might be interested. They also will report it to the ASA field teams via non-TOS communications and might give verbal briefings to the EW officer, G2, G3, and corps ATSE.

OUTPUTS

The primary outputs of this task are TOS ESD file input messages and verbal reports and briefings. Also output are TOS SRIs and queries, the responses to the SRIs and queries, and TOS graphics displays.

NOTES

The manual evaluation of new enemy EW capabilities and employment performed by ATSE personnel in the main command post using MIJI reports is explained in the next task.

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MANUAL TASK

ELEMENT: G2 ATSE Main

FUNCTION: Advises on enemy EW and signal intelligence operations.

TASK: Assists the G2, SIGSEC, and C-E elements in evaluating MIJI incidents.

FREQUENCY ESTIMATE: 1 or 2 MIJI reports per shift

CRITICALITY: 3 or 4

DUTY POSITION: EW Officer, Liaison Sergeant

INPUTS

- MIJI reports
- Documentation on enemy EW equipment characteristics
- Friendly EW equipment status used to determine what friendly EW missions are being conducted

OUTPUTS

Verbal evaluation of whether it is friendly interference or enemy jamming and recommendations as to countermeasure actions that should be taken

COORDINATION

- Inputs:
- MIJI reports normally come up through intelligence channels and a copy of the report is sent to the EW officer
 - DCAC for determining friendly jamming activities, if necessary
- Outputs:
- G2
 - Division G3
 - C-E officer

NOTES

- Typically, MIJI reports are very slow in getting up the chain of command. Thus, at present, their value is limited.
- Usually, the C-E element of the unit involved will try to determine if the interference is of friendly origin. If they cannot definitely locate a friendly source, they send a MIJI report up through channels. At division, they try to determine the source. If it is definitely enemy or division cannot determine, they send a MIJI report to corps. If a friendly source is located, they eliminate it. If an enemy source is located, they ask for a fire support mission to destroy the jammer.

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- The analysis conducted by ATSE personnel consists of determining if we are conducting EW missions that might affect the frequencies involved. This includes looking into the bandspread and harmonics of active jamming missions. They also evaluate the MIJI report to determine if it indicates the type and target of jamming the enemy is employing and if it indicates use of new EW equipment or tactics.
- This task does not qualify for TOS interaction. As currently envisioned, TOS will not handle MIJI reports. Also, the evaluation of these reports is a coordination task requiring the flexibility of verbal communications.

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TOS ASSISTED TASK

ELEMENT: G2 ATSE DCAC

FUNCTION: Disseminates status of ASA signal intelligence and EW assets.

TASK: Disseminates status of ASA signal intelligence and EW assets.

FREQUENCY ESTIMATE: Several times per shift

CRITICALITY: 3

DUTY POSITION: Senior SIGINT Analyst, Senior Signal Analyst, Senior Traffic Analyst, Signal Analyst

INPUTS

- Situation reports received from ASA field teams
- Position effectiveness reports received from ASA field teams

COORDINATION

Inputs: ASA field teams

Outputs: ● CM&D
● G3
● EW officer

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update

PROCEDURES

- Manual - DCAC personnel will receive situation reports and position effectiveness reports from ASA field teams via non-TOS communications. These will contain information on team locations and status. Copies of the full reports should be passed to the EW officer via non-TOS communications. DCAC personnel also are expected to maintain, within the DCAC, acetate charts of the current field team status and missions.
- TOS assisted - The DCAC ATSE TOS console operator will query the TOS intelligence collection management function's ICA file to retrieve those records containing ASA unit status. He will enter new ASA field team locations and changes in operating status taken from the situation reports and position effectiveness reports.

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- TOS assisted - If a new ASA signal intelligence collection capability is added to the existing ASA assets, DCAC ATSE personnel will update the TOS ICC file to give a "sanitized" description of the characteristics of the new collection means. This is expected to be a rare occurrence.
- TOS assisted - The DCAC ATSE TOS console operator might be required to maintain the current locations of ASA jamming teams in the G3's TOS TD file. If so, he will retrieve the appropriate records from the TD file and update them when a situation report contains the relocation of a jamming field team.

OUTPUTS

The outputs of this task are situation reports and position effectiveness reports passed by non-TOS means. Also output are updates to the TOS ICA, ICC, and TD files.

NOTES

- Situation reports are received from field teams whenever any equipment status change occurs or every 12 hours if no changes occur. They contain unit locations, current missions, and comments on anticipated future status. Position effectiveness reports are submitted at any time. They contain an estimate of the unit's mission effectiveness, recommendations for change, and anticipated down times of greater than four hours duration.
- The ICA and ICC files are used by the TOS intelligence collection management function in automatic selection of the best agencies to task for a specific information request.

PERSONNEL

TABLE 8.
ATSE Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
Signal intelligence officer	03	37B	1	03	37B	1*
EW officer	02	37D	1	02	37D	1**
Liaison sergeant	E7	98JK3	1	E7	98JK3	1**
Senior SIGINT analyst	E6	98C	1	E6	98C	1*
Senior signal analyst	E6	98JK3	1	E6	98JK3	1*
Senior traffic analyst	E5	98C	1	E5	98C	1*
Signal analyst	E5	98JK3	1	E5	98JK3	1*
Traffic analyst	E4	98C	<u>2</u>	E4	98C	<u>2*</u>
Total Officers/Enlisted Men			2/7			2/7

*Recommended for location in the DCAC

**Recommended for location in the main command post tactical operations center

This table depicts the manning a division might employ to sustain a 24-hour operations in a tactically deployed manual element and the manning proposed for the element to sustain 24-hour operations using TOS. The recommendations do not provide for relief or replacement personnel.

Not included in the table are a radio teletype team chief, three radio teletype operators, and three communications center specialists that appear in the doctrinal manning. The recommended movement of most ATSE functions to the DCAC with the concomitant removal of at least most special intelligence data handling from the tactical operations center could eliminate the requirement for some or all of these communications personnel. However, sufficient knowledge of classified DCAC operations and its interface with the tactical operations center was not available on which to base such a recommendation. Therefore, these communications personnel were not considered as part of this analysis. However, they are not expected to interact with TOS regardless of the final decision on their disposition.

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The table indicates that no changes in the manning level for technical personnel are anticipated. This decision is based on the assumption that DCAC operations will require the technical support of all the analysts shown in the table in addition to those ASA company personnel that presently operate the DCAC. It further assumes a mere transfer of ATSE functions from the current location to the DCAC. Further investigation of the classified operations of the DCAC, which was beyond the scope of this analysis, should be undertaken before making a final decision.

The table also indicates the recommendation that all ATSE personnel except the EW officer and liaison sergeant be relocated to the DCAC. This decision is based on the TOS hardware configuration that includes a TOS console at the DCAC (i.e., CEWI battalion). This console would be manned by ATSE personnel and used primarily to input sanitized data to the TOS data base. It is recommended that the senior SIGINT analyst and the senior signal analyst, as the duty shift NCOICs, be the primary TOS console operators with backup by the senior traffic analyst and signal analyst. These people should have a sufficient knowledge of ASA operations to make sensible inputs and to know what TOS data might be useful to aid DCAC analysis without requiring close supervision.

The EW officer and liaison sergeant should be stationed in the main command post tactical operations center to coordinate EW operations with the G3 element. They would interact closely with the DCAC personnel to pass directives and information requests and receive reports of EW activities. It is not anticipated that either one of these positions should have to operate a TOS console. The few interactions they might have with TOS could be performed by the TOS console operators regularly assigned to the various consoles in the tactical operations center.

RECOMMENDATIONS

None

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RECONNAISSANCE AND SURVEILLANCE ELEMENT

GENERAL

The reconnaissance and surveillance (R&S) element, supervised by a tactical surveillance officer, is located in the division main command post tactical operations center. They typically share a van with the air force tactical air control party (TACP).

MISSION

The primary mission of the R&S element in the tactical environment is to coordinate requests for immediate and preplanned air reconnaissance flights at the division level. In addition, R&S monitors the ground reconnaissance and surveillance activities in the division area. They also disseminate information and intelligence received by the element and supervise the distribution of maps within the division level command posts.

OVERVIEW OF TOS OPERATIONS

Under the current TOS hardware configuration, R&S will have a TOS console dedicated for its use. The R&S console will be used to receive intelligence collection tasking messages from the G2 CM&D element and to input and disseminate TOS ESD messages that report intelligence information received by R&S. The console will also be used to input air reconnaissance sortie availability status and long range reconnaissance patrol (LRRP) status and locations to the TOS intelligence collection agency file. In addition, R&S might create and maintain TOS staff working files of approved air reconnaissance mission requests, preplanned air reconnaissance mission requests, and the daily division-wide ground reconnaissance and surveillance plan.

Tasking messages sent to R&S will be those requesting information that can be collected by air reconnaissance missions. R&S personnel will determine if the information can be, or has been, collected by an already approved mission. If not, they will complete a paper air reconnaissance request form and hand it to TACP personnel for radio transmission to corps. The process of determining if the requested information can be collected by already approved missions might be aided by the maintenance of approved mission data in a TOS staff working file. The file would be queried to retrieve any approved missions that could collect the requested information.

A staff working file of approved air reconnaissance missions could also be used as an aid in determining the acceptability of immediate air reconnaissance requests coming up from subordinate units over the TACP radio net. R&S would

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query the file to determine if any already approved flights match the essential characteristics of the new request. If so, R&S might ask that the new request be disapproved or combined with an existing one.

R&S will use the TOS console to create and disseminate ESD file input messages reporting intelligence information taken from air reconnaissance in-flight reports as received from TACP personnel. In the manual environment, R&S also disseminates LRRP reports and air reconnaissance mission analysis reports received from the corps R&S element. Under TOS, corps R&S should be able to input directly into the division ESD file. It is estimated that this will reduce the division R&S requirements for this task by about eighty percent.

R&S will also use the TOS console to maintain within the ICA file the availability status of air reconnaissance sorties and the current location and status of corps LRRPs that are operating within the division's area of interest. The ICA file will be used by the TOS intelligence collection management function in automatically selecting the best assets to task for a given collection request.

There are two instances where R&S could use TOS staff working files to "roll up" the separate plans of battalions and brigades into division-wide plans. A staff working file could be developed to contain preplanned air reconnaissance requests. Battalions would input their requests, brigades would review and modify them and add their own, and division R&S would review and modify the finished brigade plans and add any division requests. The finalized division-wide requests would then be accessible to corps via a query of the staff working file. Daily ground reconnaissance and surveillance plans might also be rolled up in a staff working file in a similar fashion.

The performance of certain R&S tasks will not involve TOS interaction. Coordinating of air reconnaissance missions for air space restrictions will involve the DAME's informing R&S of any airspace problems with a proposed mission. This coordinating can be accomplished faster and more flexibly via voice communications. The same reasons apply for not using TOS to convey recommendations for LRRP locations to corps R&S. Preparation of the R&S appendix to the division OPORD will not involve TOS interaction as none of the inputs are expected to come from TOS and the appendix itself will be too large and unstructured for inclusion in TOS. Finally, TOS will not be used to aid in the procurement or inventorying of maps needed in the division command posts. This is an administrative function and TOS is intended for tactical operations only.

Under TOS, R&S will no longer be responsible for passing LRRP intelligence collection requests or requests for imagery interpretation support to corps R&S. CM&D personnel will send ICT messages directly to corps without the division R&S interface. As was mentioned previously, R&S will also no longer receive LRRP reports and air reconnaissance analysis results from corps R&S.

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Corps R&S will enter these directly into the division ESD file.

FUNCTIONS AND TASKS

Functions and tasks performed by the R&S element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 9.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

TABLE 9.
G2 Reconnaissance and Surveillance Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	Tactical Surveillance Officer	Assistant Tactical Surveillance Officer	Intelligence Sergeant (R&S)
Plans and coordinates reconnaissance and surveillance activities throughout the division.			
Receives, processes, and coordinates requests for air reconnaissance support.	(X)	(X)	(X)
Coordinates all air reconnaissance missions for airspace restrictions.	X	X	X
Prepares the R&S appendix to the division OPOD intelligence annex.	X		X
Maintains air reconnaissance sortie and LRRP status in the TOS intelligence collection agency file.	(X)	(X)	(X)
Recommends positioning of corps long range reconnaissance patrols within the division area of interest.	X	X	
Coordinates the division daily ground reconnaissance and surveillance plan.	(X)	(X)	(X)
Disseminates information and intelligence received by the element.	(X)	(X)	(X)

TABLE 9. (Continued)
G2 Reconnaissance and Surveillance Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	Tactical Surveillance Officer	Assistant Tactical Surveillance Officer	Intelligence Sergeant (R&S)
Supervises the distribution of maps within the division command posts.			
Prepares plans and policies concerning military maps and determines map requirements for the division-level command posts.	X	X	X
Maintains the map library for division staff sections.	X	X	X
Performs the hookup, energizing, initialization, and checkout of the TOS console.			(X)

X - Manual Task

(X) - TOS Assisted Task

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TOS ASSISTED TASK

ELEMENT: G2 R&S Main

FUNCTION: Plans and coordinates reconnaissance and surveillance activities throughout the division.

TASK: Receives, processes, and coordinates requests for air reconnaissance support.

FREQUENCY ESTIMATE: 12 requests for immediate support per shift

CRITICALITY: 2

DUTY POSITION: Tactical Surveillance Officer, Assistant Tactical Surveillance Officer, Intelligence Sergeant

INPUTS

- Completed air reconnaissance forms received from TACP personnel at division
- TOS ICT messages originated by CM&D
- Daily reconnaissance mission availability list received from the corps direct air support center
- Previously approved mission requests to compare with new request
- Map overlay showing reconnaissance target locations
- Preplanned reconnaissance requests received from brigade S2s

COORDINATION

- Inputs:
- TACP for immediate air requests from subordinate units as copied over the air force radio net
 - CM&D for ICT messages that request air reconnaissance
 - Corps direct air support center for daily list of available reconnaissance missions
 - Brigade S2s for brigade and battalion preplanned air reconnaissance requests
- Outputs:
- TACP to pass new immediate air reconnaissance requests and approvals and disapprovals of existing requests
 - Corps R&S to pass division preplanned air reconnaissance requests
 - Brigade S2s to inform them of disapproved preplanned air reconnaissance requests

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access

- Data transfer
- Graphics
- File update

PROCEDURES

- TOS assisted - R&S personnel might develop a staff working file for storing approved air reconnaissance requests. The file record items would be defined to match the items on an air reconnaissance request form. Approved air reconnaissance requests, both immediate and preplanned, would then be entered into this staff working file.
- Manual - R&S personnel will receive completed air reconnaissance request forms from the TACP. These will be immediate requests coming from subordinate units over the air force radio net. R&S personnel will be required to review these requests and approve or disapprove them within a 10 minute time limit. R&S personnel will review the request for obvious errors such as improper sensor selection for the information requested or an erroneous target location. The originator will be asked to change any errors and retransmit the request or R&S personnel will correct the report themselves.
- TOS assisted - If the staff working file is kept, R&S personnel can develop prestored generalized queries that will allow the console operator to compare a new request with existing approved requests. The purpose of this comparison would be to determine if existing requests could fulfill the information requirements of the new request. The query could contain comparison parameters for such items as target location, target type, type of results requested, and reporting time. The operator would enter the specific values from the new request in the prestored skeletal query and execute the query against the staff working file. If the query produces any associations, R&S might ask TACP personnel to radio transmit a disapproval of the new request, stating either that the data is already being gathered or that the request will be combined with an existing one. Approved requests would be entered in the staff working file. The operator would purge the staff working file daily.
- TOS assisted - R&S personnel will receive TOC ICT messages which request information that could be collected by air reconnaissance. The R&S console operator will hardcopy the ICT messages. He will query the approved request staff working file to see if the information is already being collected. If it is, he should not need to take any further action because the results of the approved mission will come in as ESD file inputs and satisfy the request. If the requested information is not already being collected, then R&S will use the tasking information in the ICT message to complete an immediate air reconnaissance request form. Completion of the form may require voice communication with the request originator. When completed, the form will be given to TACP personnel for transmission to the corps direct air support center over the air force radio net.

- TOS assisted - R&S personnel might develop a staff working file for handling preplanned air reconnaissance requests. Like the approved request file, the items would be defined to match the items on an air reconnaissance request form. Battalion S2s would enter their preplanned requests in the file and inform brigade S2 via a TOS relay message or voice communication when they are completed. Brigade S2s would query the file to hardcopy the inputs from their battalions. The brigade S2s would then review the requests and combine them where possible. They may also disapprove some requests and change the priorities on others. Where required, they would coordinate these changes with the affected battalion S2s. They would then modify and delete battalion file entries as required and add brigade requests. When completed, brigade S2s would notify division R&S personnel via a TOS relay message or voice communication. R&S personnel would review and modify the file in the same manner as the brigade S2s did and add division requests. When completed, they would notify corps R&S that the file is ready for corps review. Corps would coordinate any changes to the division's request with division R&S personnel. Division R&S personnel would in turn notify affected brigade S2s and make any required changes to the division file.

OUTPUTS

The outputs of this task are TOS queries and responses to those queries, TOS relay messages, and staff working files. Completed and reviewed air reconnaissance request forms and voice communications are also outputs.

NOTES

- Immediate air reconnaissance requests are input directly to corps direct air support center by battalions, brigades, and divisions over an air force radio net. All echelons monitor the transmissions and any higher echelon can disapprove the requests submitted by its subordinates.
- Preplanned air reconnaissance requests are submitted through army channels a day in advance. It appears that preplanned requests are rarely used because the mobility of the battlefield makes it difficult to plan that far in advance. The suggested use of a staff working file to "roll up" preplanned requests will be tenable only if the number of such requests is larger than is presently believed.
- The use of a staff working file for comparing immediate air reconnaissance requests also must depend on the anticipated number of such requests. If R&S personnel can mentally retain the details on existing requests, then there would appear to be no advantage to machine storage.
- TOS ICT message tasking could conceivably result in many air reconnaissance requests that duplicate those coming up over the air force net. Whoever is operating the R&S console would have to identify and eliminate these duplications. This potential problem could be avoided if it were standard procedure that brigade and battalion S2s indicate on the ICR messages they

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submit if a request for this information was also sent via air force channels. Thus, CM&D would know not to task R&S for the information.

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MANUAL TASK

ELEMENT: G2 R&S Main

FUNCTION: Plans and coordinates reconnaissance and surveillance activities throughout the division.

TASK: Coordinates all air reconnaissance missions for airspace restrictions.

FREQUENCY ESTIMATE: 12 per shift

CRITICALITY: 4

DUTY POSITION: Tactical Surveillance Officer, Assistant Tactical Surveillance Officer, Intelligence Sergeant

INPUTS

- Completed immediate air reconnaissance request forms
- Preplanned air reconnaissance requests as hardcopied from a TOS staff working file or as exist on air reconnaissance request forms

OUTPUTS

Verbal approval or disapproval of the mission by the division airspace management element (DAME). Disapprovals are passed on to the TACP.

COORDINATION

Inputs:

- DAME ADA officer
- G3 air officer
- NBC officer

Outputs:

- TACP to pass mission disapprovals received from the DAME

NOTES

- The DAME should receive from the TACP a copy of each immediate air reconnaissance request. They then would inform R&S if there are any airspace management problems associated with the flight. This type of interaction needs the flexibility and speed afforded by voice communications and thus does not qualify for TOS use.
- Theoretically, this task is necessary to avoid loss of the reconnaissance aircraft from Air Defense Artillery (ADA) or FSE artillery fire, from flying over ground zero of an NBC strike or being in the same area simultaneously with an air strike. Also, the G3 air officer can tell if there is going to be a battle damage assessment overflight of the requested

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reconnaissance area, thus avoiding a possible duplication of effort. However, the investigated division personnel said that it is more a corps-level function. Corps is in a better position to know the air restriction situation because air reconnaissance missions are normally flown outside the division airspace.

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MANUAL TASK

ELEMENT: G2 R&S Main

FUNCTION: Plans and coordinates reconnaissance and surveillance activities throughout the division.

TASK: Prepares the R&S appendix to the division OPORD intelligence annex.

FREQUENCY ESTIMATE: When the mission changes, maybe every three days.

CRITICALITY: 4

DUTY POSITION: Tactical Surveillance Officer (writes), Intelligence Sergeant (proofreads)

INPUTS

- Corps OPORD R&S appendix
- Corps direct air support center daily frag order showing the air reconnaissance missions available for that day
- Format and content guidance from FM 30-20 and FM 30-5
- Division mission EEI from the G2
- Last division OPORD R&S appendix
- Personal experience and preferences of the tactical surveillance officer
- Division field standing operating procedures

OUTPUTS

Handwritten R&S appendix. The handwritten copy is given to G2 operations personnel to type; then the R&S intelligence officer proofreads the typed appendix before it goes to the G2 or assistant G2.

COORDINATION

Inputs:

- Corps direct air support center
- G2

Outputs: G2 or assistant G2

NOTES

- The corps OPORD states what reconnaissance assets are available to the division, the number and general timing of daily reconnaissance sorties available to the division, the number and location of long range reconnaissance patrols, and the block of air reconnaissance request numbers assigned to the division. The corps direct air support center daily frag order contains

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the air reconnaissance sorties assigned to the division for a given day.

- The R&S officer further divides the division's air reconnaissance request numbers between the brigades, cavalry squadron, DIVARTY, and division headquarters. The amount of request numbers assigned to a unit depends on the relative number of requests he expects that unit to make.
- Whatever is useable is taken from the last OPORD and reference is made to the division field standing operating procedures where possible.
- The R&S officer monitors the implementation of the directives in the R&S appendix. If he notices any problems, he goes thru G2 channels to correct them.
- Changes to the R&S appendix, such as a new unit being added to the division, are accomplished by frag order with reference to the basic appendix.
- It is not envisioned that TOS will be used in the production or transmission of any part of the intelligence annex. This is due to the size and essentially free text nature of the annex. Also, it appears that the inputs to this task will all be provided without TOS assistance.

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TOS ASSISTED TASK

ELEMENT: G2 R&S Main

FUNCTION: Plans and coordinates reconnaissance and surveillance activities throughout the division.

TASK: Maintains air reconnaissance sortie and LRRP status in the TOS intelligence collection agency file.

FREQUENCY ESTIMATE: Several times per shift

CRITICALITY: 3

DUTY POSITION: Tactical Surveillance Officer, Assistant Tactical Surveillance Officer, Intelligence Sergeant

INPUTS

- LRRP locations obtained directly from corps R&S or from the division TOS file
- Number of sorties available for the day from the corps direct air support center's daily frag order

COORDINATION

- Inputs:
- Corps R&S for LRRP location
 - Corps direct air support center for daily sortie availability

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update

PROCEDURES

- TOS assisted - The R&S TOS console operator will establish an SRI against the TD file to notify him of any changes to LRRP location entries. R&S will receive direct notification from corps of LRRP unavailability.
- TOS assisted - The R&S console operator will receive LRRP location changes on his console. He will query the TOS ICA file to retrieve the record containing LRRP status. He will enter the new LRRP location or availability status in the appropriate item.
- Manual - R&S will keep a count of the number of air reconnaissance sorties available for the day minus the number of approved mission requests.

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- TOS assisted - When no more sorties are available, the R&S console operator will retrieve the ICA record for air reconnaissance and set the availability to zero. CM&D could still task air reconnaissance, but with the knowledge that the likelihood of approval is greatly reduced.
- Manual - R&S will coordinate with CM&D via voice communications to clarify status problems.

OUTPUT

The outputs of this task are TOS SRIs and their responses, updated ICA file records, and voice communications.

NOTES

The purpose of this task is to maintain the current status of collection assets to be used by the TOS intelligence collection management function in automatic selection of the best agencies to task for a specific request.

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MANUAL TASK

ELEMENT: G2 R&S Main

FUNCTION: Plans and coordinates reconnaissance and surveillance activities throughout the division.

TASK: Recommends positioning of corps long range reconnaissance patrols within the division area of interest.

FREQUENCY ESTIMATE: Less than once per day

CRITICALITY: 3

DUTY POSITION: Tactical Surveillance Officer, Assistant Tactical Surveillance Officer

INPUTS

- Actual locations of LRRPs as provided by corps R&S
- Recommended LRRP positioning from the G2 and A&P officer

OUTPUTS

Free text voice recommendation to corps R&S for LRRP locations given prior to a mission

COORDINATION

- Inputs:
- Corps R&S for actual LRRP locations
 - G2 and A&P officer for LRRP positioning recommendations

Outputs: Corps R&S to pass recommended LRRP location

NOTES

- LRRPs are corps assets. Division can request that the LRRPs be placed in certain locations but corps has the ultimate responsibility.
- Under TOS, R&S personnel will no longer be involved in recommending EEI for LRRP teams to corps R&S. All tasking will go through CM&D. The task of recommending LRRP locations is not expected to be frequent, involved, or critical enough to warrant TOS interaction.

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TOS ASSISTED TASK

ELEMENT: G2 R&S Main

FUNCTION: Plans and coordinates reconnaissance and surveillance activities throughout the division.

TASK: Coordinates the division daily ground reconnaissance and surveillance plan.

FREQUENCY ESTIMATE: Once per day

CRITICALITY: 4

DUTY POSITION: Tactical Surveillance Officer, Assistant Tactical Surveillance Officer, Intelligence Sergeant

INPUTS

- Brigade daily ground reconnaissance and surveillance plans
- Mission EEI as contained in the OPORD intelligence annex
- Division first echelon intelligence needs obtained from coordination with G2 operations, CM&D, or A&P elements

COORDINATION

Inputs: • Brigade S2s
 • G2 CM&D, or A&P

OUTPUTS: Brigade S2s

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics
- File update

PROCEDURES

- TOS assisted - R&S personnel might develop a staff working file for handling ground reconnaissance and surveillance plans. The file would be defined so that a record would contain information on the ground patrols and surveillance radar status for a given battalion. Each battalion would enter its plan and transmit it to brigade. Each brigade would review its battalions plans and then inform division R&S via a relay message or voice communications when the plans are ready for division review.

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- TOS assisted - After R&S personnel receive the notification from brigade, the TOS staff working file would be queried to retrieve the records for that brigade's battalions. The records would be hardcopied. R&S personnel then might build a TOS graphics display or use an acetate map to illustrate patrol objective locations and timing as well as surveillance locations and coverage. They would compare the plans of each brigade for overlap. They might discuss the first echelon intelligence needs with G2 operations, CM&D, or A&P personnel to help determine if the plans are adequate. R&S would inform the affected brigade S2 of any desired changes to the plans and would update the staff working file accordingly.

OUTPUTS

The outputs of this task are TOS queries and the responses to these queries, relay messages, and staff working file updates. Voice communications are also output.

NOTES

The value of using TOS to roll up ground reconnaissance and surveillance plans would be in reducing the time required for all echelons to review the plans. This is important in assuring that unnecessary patrols are scrubbed in time to prevent their occurrence.

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TOS ASSISTED TASK

ELEMENT: G2 R&S Main

FUNCTION: Disseminates information and intelligence received by the element.

TASK: Disseminates information and intelligence received by the element.

FREQUENCY ESTIMATE: See notes

CRITICALITY: 2

DUTY POSITION: Tactical Surveillance Officer, Assistant Tactical Surveillance Officer, Intelligence Sergeant

INPUTS

Air reconnaissance in-flight reports copied by TACP personnel over the air force radio net

COORDINATION

Inputs: TACP for copies of air reconnaissance in-flight reports

Outputs: Any TOS user on distribution for the R&S ESD input messages

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- File update

PROCEDURES

- Manual - TACP personnel will copy in-flight reports broadcast over the air force radio net by reconnaissance flights. TACP personnel will give a copy of the report to R&S personnel.
- TOS assisted - R&S personnel use the TOS staff working file of approved missions or a paper list of missions to determine if the reporting mission is one that was requested by division. If so, they will compose a TOS ESD file input message that contains the in-flight report information. They will distribute the message to the element that requested the mission and to any other TOS user they feel should have the information.

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NOTES

- In the manual configuration this is a much larger task. Division R&S presently receives and distributes not only air reconnaissance in-flight reports but also the LRRP reports and analyzed air reconnaissance mission results generated by corps R&S. At the investigated division, this amounted to about 75 reports per shift. Under TOS, corps R&S should be able to input directly to the division ESD file all those corps reports of interest to the division. No frequency estimate was obtained for just in-flight reports. However, if all requested missions were approved and flown and each made one in-flight report, then an average of 12 in-flight reports per shift would be received at the investigated division.
- It is envisioned that each unit will input those ESD messages concerning in-flight reports on missions that they requested. This should avoid duplicate reporting.

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MANUAL TASK

ELEMENT: G2 R&S Main

FUNCTION: Supervises the distribution of maps within the division command posts.

TASK: Prepares plans and policies concerning military maps and determines map requirements for the division-level command posts.

FREQUENCY ESTIMATE: No more than 2 to 3 times per month. Initial combat load should be a 30 day supply.

CRITICALITY: 1

DUTY POSITION: Tactical Surveillance Officer, Assistant Tactical Surveillance Officer, Intelligence Sergeant

INPUTS

- A unit's mission and area of operation determine the specific types and quantity of maps required. G3 supplies the area of operation information.
- FM 101-10 series provides guidelines for determining map quantities
- Corps OPORD logistics and engineer annexes contain guidance for resupply
- Written statement of map requirements from every division element in the main, tactical, and DIVARTY command posts

OUTPUTS

Verbal or written request for maps sent to the corps R&S element by the best means available

COORDINATION

- Inputs:
- All elements in each division command post to determine map requirements
 - G3 for definition of the division's area of operation and to receive any changes in the area of operation or in the mission

Outputs: Request for maps to corps R&S element

NOTES

- The division R&S element does not handle map requirements for lower echelons. However, the tactical surveillance officer may advise subordinate unit S2s on map problems.
- This task is not considered a candidate for TOS interaction because of the

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coordination required, its low frequency, and its essentially administrative nature. However, the map backgrounds for TOS consoles and large screen display devices may require special maps and thus add to the requirements of this task.

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MANUAL TASK

ELEMENT: G2 R&S Main

FUNCTION: Supervises the distribution of maps within the division command posts.

TASK: Maintains the map library for division staff sections.

FREQUENCY ESTIMATE: 3 to 5 interactions per shift

CRITICALITY: 3

DUTY POSITION: Tactical Surveillance Officer, Assistant Tactical Surveillance Officer, Intelligence Sergeant

INPUTS

Request for additional maps from any division command post element

OUTPUTS

- Requested maps given to requesting element
- Map inventory matrix updated

COORDINATION

Inputs: Any element from any command post within the division

Outputs: Same as inputs

NOTES

- The R&S element overstocks every map required for the mission area in order to provide resupply and additional maps when required. These maps are stored at the main command post in a 3/4 ton truck. The R&S element is responsible for inventory and distribution when required.
- A map inventory matrix is maintained on a 1:250k acetate map encompassing the entire division area of operation. The area covered by each stocked 1:50k map is drawn on the large matrix map along with its sheet number and the quantity in stock. Each time a map is given out its quantity is changed on the matrix.
- This is an administrative task that does not qualify for TOS interaction.

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PERSONNEL

TABLE 10.
R&S Element Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
Tactical surveillance officer	04	35C	1	03	35C	1
Assistant tactical surveillance officer	02	35C	1	02	35C	1
Intelligence sergeant (R&S)	E8	96D	1	E8/E7	96D	2
Radar operations sergeant	E7	17K	1	-	-	-
Sensor operations sergeant	E7	17M	<u>1</u>	-	-	<u>-</u>
Total Officer/Enlisted Men			2/3			2/2

This table depicts the manning a division might employ to sustain a 24-hour operations in a tactically deployed manual element and the manning proposed for the element to sustain 24-hour operations using TOS. The recommendations do not provide for relief or replacement personnel.

The source used for doctrinal manning has four tactical surveillance officers assigned to the division main command post, two are assigned directly to the G2 section and two are augmentation from the combat intelligence company. Although it is not known what function the two additional officers would serve, it is felt that there would be no necessity to assign them to R&S. Therefore, they are not included in the doctrinal manning in the above table.

The radar operations sergeant and sensor operations sergeant are part of the doctrinal combat intelligence company augmentation. They might have been assigned to R&S to aid in the planning and coordinating of reconnaissance and

surveillance systems in the division, which was at one time considered to be a function of R&S. These systems, such as ground surveillance radar, SOTAS, and Remotely Piloted Vehicle (RPVs) will probably either be attached to lower echelons or have their own operations and planning sections. Without this function, these positions cannot be justified under TOS.

The recommended manning under TOS is one officer and one intelligence sergeant per shift. Both the officer and the sergeant would operate the TOS console to assure continuous availability of TOS and flexibility of element operations.

RECOMMENDATIONS

Share the R&S TOS console with other elements in the main command post tactical operations center.

Under the current TOS hardware configuration, the R&S element will have a dedicated TOS console. It is recommended that this console be shared with other elements.

The justification for this recommendation is the anticipated low console utilization by R&S. The TOS use described in the R&S tasks would probably require no more than three or four hours at the console per 12-hour shift. If staff working files are not used for approved air reconnaissance requests, preplanned air reconnaissance requests, and daily ground R&S plans, then R&S element console usage will probably not exceed two hours per shift.

Depending on the tactical operations center setup, it might be possible to have the DAME, G3 air, and R&S personnel share the console. None of these elements taken individually should have a high demand for TOS interaction and their functions are somewhat related. This would also give the FSE more console availability than under the present hardware configuration which has the DAME and G3 air sharing a console with the FSE.

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COUNTERINTELLIGENCE CONTROL ELEMENT

GENERAL

The counterintelligence (CI) control element will be located either in the division main command post or in the division support area. CI-trained personnel are typically not organic to the division G2 section but rather are provided as combat intelligence company augmentation. Besides the control element, sufficient CI-trained personnel are often provided to permit two-man special agent field teams at each maneuver brigade, DIVARTY, and the division support area. These field teams provide CI support to the units to which they are assigned but may still be tasked by and provide reports to the CI control element.

MISSION

The mission of the CI control element is to plan, disseminate, and monitor the CI aspects of operational security and countersurveillance and to provide staff supervision, tasking, and control of division CI field teams. The focus of the division CI effort is to neutralize or destroy the effectiveness of the enemy's intelligence collection system.

OVERVIEW OF TOS OPERATIONS

The CI control element is not assigned to a TOS console under the current TOS hardware configuration. However, it is felt that when TOS is fully implemented, it will be difficult for CI control personnel to perform their analysis and reporting functions without very frequent access to the TOS data base. Therefore, this description assumes that the CI control element will have the required access. A logical location for the CI control TOS interface would be with A&P in the all source intelligence center van. This would give the CI control element access to the large screen display device and to the latest estimates of the enemy situation and intentions. It would also allow CI personnel to contribute their knowledge of the enemy's intelligence gathering activities in developing a picture of the enemy's intentions. Also, if ATSE signal intelligence functions are moved to the DCAC, it might provide sufficient room in the all source intelligence center van for at least one shift member of the CI control element. The second shift member could be located outside the tactical operations center inclosed area and would be responsible for communications with the CI field teams, while communicating with the first shift member via field phone. A recommendation for a TOS console dedicated for CI control element use is contained in the recommendations section of the element descriptions.

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CI control element personnel will use the TOS console to receive intelligence collection tasking messages from the G2 CM&D element. If appropriate, the CI control element will pass the tasking to CI field teams via non-TOS communications.

They might use the TOS console to retrieve ESD, EOB, TER, TD, and staff working file data as aids in analyzing the enemy's intelligence collection activities. They will establish SRIs and queries to retrieve ESD messages that report enemy intelligence collection activities. They will retrieve weather information from the intelligence summary staff working file, if it is kept there. They might query the EOB, TD, and TER files to retrieve the locations of enemy and friendly units and of terrain features such as key terrain, trafficability, barriers, and cover and concealment. From these data they could build graphics displays to use in determining patterns of collection, sabotage, and subversion activities; possible routes for enemy patrol infiltration; location and coverage of enemy electromagnetic collection devices; and routes and timing of actual enemy ground reconnaissance patrols and aerial reconnaissance flights. Based on their analysis of this and other data, they could determine what the enemy is capable of collecting; the most probable future enemy collection, sabotage, and subversion activities; and what the enemy probably knows about us from their current and past collection activities.

CI control element personnel will use TOS as one method of reporting information gained from CI field teams and intelligence resulting from CI control element analysis. They will enter ESD input messages. If an intelligence summary staff working file is kept, then CI control element personnel might maintain a summary of the enemy's intelligence, sabotage, and subversion activities, capabilities, and probable future courses of action in this file. They might also use the file to disseminate recommended friendly countermeasures.

TOS will not be used for direct interaction with the CI field teams. The CI field teams will have no TOS equipment, but some passing of tasking and reporting could be accomplished via TOS through the S2 of the unit the field team is supporting. Full agent reports of counterintelligence investigations will not be passed via TOS due to their size.

TOS will not be used to develop or transmit the CI annex to the OPORD due to its size and free text nature. TOS also will not be used in the actual planning of psychological or cover and deception operations because such planning requires the flexibility of verbal interaction. Also, TOS has no capability to aid in the periodic security inspections performed by CI control personnel.

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FUNCTIONS AND TASKS

Functions and tasks performed by the CI control element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 11.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 11.
G2 Counterintelligence Control Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	Counterintelligence Officer	CI Special Agent
Coordinates counterintelligence activities and services.	(X)	(X)
Supervises counterespionage, countersabotage, and countersubversion activities and provides planning information.	(X)	(X)
Reports the results of counterintelligence activities.	X	X
Directs periodic security inspections.	X	X
Directs division counterintelligence investigative activities.	X	X
Provides counterintelligence inputs to operational planning.	(X)	(X)
Develops the counterintelligence aspects of the operations security program designed to portray how the enemy sees us.	X	X
Participates in the intelligence aspects of planning psychological operations.		

X - Manual Task

(X) - TOS Assisted Task

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TOS ASSISTED TASK

ELEMENT: G2 CI Control Main

FUNCTION: Coordinates counterintelligence activities and services.

TASK: Supervises counterespionage, countersabotage, and countersubversion activities and provides planning information.

FREQUENCY ESTIMATE: Process is continuous. Specific tasking of CI teams might occur two or three times per shift.

CRITICALITY: 2

DUTY POSITION: CI Officer, CI Special Agent

INPUTS

- TOS ICT messages received from CM&D
- TOS ESD input messages
- TOS graphics displays
- Information picked up by monitoring the intelligence radio net
- Information picked up by visiting each G2 element
- Last OPORD CI annex used in creating the new one
- Information on CI teams received from brigade S2s

COORDINATION

Inputs: • Any element requesting intelligence data collection through CM&D
 • Any element making inputs to the TOS ESD file
 • All G2 elements
 • Brigade S2s

Outputs: • G2 for OPORD CI annex
 • CI teams for tasking

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Graphics

PROCEDURES

- Manual - For a new mission, the CI officer will handwrite the CI annexes to the OPORD and give it to the G2 or assistant G2. The CI annex lists intelligence countermeasures and indicates the units or agencies responsible for each. It is fairly standard and is based on the mission, the last CI annex, and the personal knowledge of the CI officer.
- TOS assisted - CI control element personnel will receive those TOS ICT messages requesting information that could be collected by CI teams. CI control element personnel will transmit these requests to CI field teams via non-TOS communications.
- TOS assisted - CI control element personnel might establish SRIs and queries that will retrieve ESD messages containing information on enemy collection activities and capabilities and suspected sabotage and espionage events. CI control element personnel could evaluate these messages for patterns of enemy activity. They might create graphics displays to help visualize the spatial and time relationships between the events. Based on their analysis, they would task CI field teams to gather data or investigate areas that might confirm the suspected pattern.

OUTPUTS

The outputs of this task are TOS SRIs and queries, the responses to these SRIs and queries, and TOS graphics displays. Tasking requests sent to CI field teams via non-TOS communications are also output.

NOTES

- The CI teams attached to brigades, DIVARTY, and Division Support Command (DISCOM) are used as assets of those units. However, the CI officer might override any tasking levied by the unit S2 or might even move the CI team if he feels it is necessary.
- If there are no adequate direct communications between CI control and the CI field teams, CI control might simply retransmit the ICT message, with appropriate remarks, to the S2 of the unit the CI field team is supporting. The S2 would then see that it gets to the CI field team.

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TOS ASSISTED TASK

ELEMENT: G2 CI Control Main

FUNCTION: Coordinates counterintelligence activities and services.

TASK: Reports the results of counterintelligence activities.

FREQUENCY ESTIMATE: One spot report per hour sent down to CI teams; fewer than that input as ESD messages

CRITICALITY: 2

DUTY POSITION: CI Officer, CI Special Agent

INPUTS

- Spot reports received from CI field teams
- TOS ESD input messages
- TOS graphics displays
- Information picked up by monitoring the intelligence radio net
- Information picked up by visiting each G2 element

COORDINATION

- Inputs: ● CI field teams
 ● All G2 elements
 ● Any element or unit making inputs to the TOS ESD file
- Outputs: ● Any element or unit using the CI inputs to the ESD file or the intelligence summary file
 ● G2 or assistant G2 for briefing notes

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update
- Graphics

PROCEDURES

- TOS assisted - As mentioned in the preceding task, CI control element personnel might establish SRIs and queries to retrieve ESD information on enemy collection, sabotage, and espionage activities to evaluate this information for patterns. They might create graphics displays of the events

to aid in the analysis. When patterns are established, they might enter ESD input messages reporting the pattern. The CI control element will also receive spot reports from CI field teams. These might be translated directly into ESD inputs or held for confirmation.

- Manual - Certain spot reports and results of pattern analysis will be disseminated just within the CI community via non-TOS means. Other elements and units do not have an immediate "need to know" this information and sources must be protected. Also, keeping certain information from broad dissemination will increase the chances of apprehending enemy agents.
- TOS assisted - If an intelligence summary staff working file is kept as described in the A&P element description, then CI control element personnel might maintain a CI summary in that file. The CI summary would contain the most current estimate of the enemy's intelligence, sabotage, and subversive activities, capabilities, and probable future courses of action as well as recommended friendly countermeasures. This information might be obtained from corps and/or be based on division analysis. It would be updated as required.
- Manual - The CI officer will handwrite notes on CI activities for the G2's use in the twice daily commander's briefings. These notes might summarize the tasking, reporting, analysis, and/or estimates made by the CI section.

OUTPUTS

The outputs of this task are TOS ESD messages, messages sent to CI field teams via non-TOS communications, updates to the TOS intelligence summary staff working file, and handwritten notes for the commander's briefing. Also output are TOS SRIs and queries, the responses to these SRIs and queries, and TOS graphics displays.

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MANUAL TASK

ELEMENT: G2 CI Control Main

FUNCTION: Coordinates counterintelligence activities and services.

TASK: Directs periodic security inspections.

FREQUENCY ESTIMATE: Continuously on the lookout for possible security problems. Conducts periodic inspections when unit is in rear in reinforcing position.

CRITICALITY: 2

DUTY POSITION: CI Officer, CI Special Agent

INPUTS

- Personal knowledge and training in recognizing "indicators" that give away our location, functions, and activities to the enemy
- Physical set up of the command post

OUTPUTS

Verbal informing of appropriate supervisor if any avoidable indicators are discovered

COORDINATION

Inputs: None

Outputs: Any command post element supervisor

NOTES

- The common indicators include: lights at night, insufficient camouflage, unnecessary noise, and unnecessary heat disclosure. CI personnel also check for adequate military police security at the command post and for adequate security when the command post is in convoy. Communications and electronic security are checked by the SIGSEC element.
- When the division is in a rear area, periodic inspections are conducted including the above plus such things as classified document checks and checks in local communities to determine if troops are passing sensitive or classified data.
- This task does not qualify for TOS interaction.

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MANUAL TASK

ELEMENT: G2 CI Control Main

FUNCTION: Coordinates counterintelligence activities and services.

TASK: Directs division counterintelligence investigative activities.

FREQUENCY ESTIMATE: Maybe one a day for all CI teams within the division area of operation

CRITICALITY: 2

DUTY POSITION: CI Officer, CI Special Agent

INPUTS

Notification of suspected personnel security violation, lost classified document, or suspected espionage, sabotage, or subversion. The notification includes a description of the problem plus tasking to investigate the problem.

OUTPUTS

Agent report of incident investigation reviewed by the CI officer

COORDINATION

Inputs: Normally the division G2, brigade S2, or corps CI battalion

Outputs: The G2 or his representative

NOTES

- The investigation is performed by the CI special agent or is assigned to one of the CI field teams if the event is in their area.
- The agent doing the investigation writes a narrative report of his findings on the agent report form and submits it to the CI officer for review. The CI officer passes it to the G2 and may enter ESD input messages as described in a preceding task.
- Normally, the CI control element will first receive agent report data in the form of ESD input messages from the unit involved. Later they would get an actual hardcopy of the agent report. The report summarizes the incident and contains the agent's analysis of the incident's impact and the agent's evaluation of the incident particulars. The report may also contain recommendations on how to avoid reoccurrences and on actions to take to minimize the damage. For instance, you might recommend a change in security policy if the incident points out a fault in current policy.

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- This task of directing division CI investigations does not qualify for TOS assistance. The request to conduct such an investigation is expected to be received via radio, written message, or face to face communications, although it could be sent as a TOS relay message. The directing of CI field teams will be accomplished via direct radio communications. The full agent report will not be sent via TOS due to its size.

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TOS ASSISTED TASK

ELEMENT: G2 CI Control Main

FUNCTION: Provides counterintelligence inputs to operational planning.

TASK: Develops the counterintelligence aspects of the operations security program designed to portray how the enemy sees us.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 2

DUTY POSITION: CI Officer, CI Special Agent

INPUTS

- TOS ESD file
- TOS TER file
- Weather data from a TOS staff working file
- TOS EOB file
- TOS TD file
- TOS graphics displays
- Spot reports and agent reports from CI field teams
- Existing army studies on the economic, political, and social makeup of the host country
- Black, grey, and white list indicating which local organizations are hostile, which are of unknown loyalties, and which are friendly
- Data from the SIGSEC element concerning what friendly information has been passed in the clear
- Information on enemy electromagnetic collection capabilities and activities from the ATSE element
- Information from the corps CI element concerning enemy intelligence gathering activity in adjacent division areas
- Information picked up by monitoring the intelligence radio net
- Information picked up by visiting each G2 element
- Personal knowledge and experience of CI control element personnel

COORDINATION

- Inputs:
- Any element or unit inputting to the ESD, EOB, TER, and TD files
 - Weather element for weather data
 - CI field teams
 - SIGSEC element for possible compromised friendly information
 - ATSE element for information on enemy electromagnetic data collection

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- All other G2 elements for information on the current enemy situation
- Corps CI element

Outputs:

- G3 for recommendations for cover and deception operations
- Any element or unit using CI inputs to the ESD file and the intelligence summary staff working file
- Any element or unit sent specific recommendations for countermeasures
- G2 or assistant G2 briefed on important analysis findings

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update
- Graphics

PROCEDURES

- TOS assisted - CI control element personnel might retrieve key terrain, trafficability data, barriers, and cover and concealment data, if available, from the TOS TER file. They would use these data in conjunction with terrain maps to determine the most likely infiltration routes for enemy ground reconnaissance and sabotage patrols as well as nap-of-the-earth flight routes for possible enemy airmobile insertion. They might create graphics displays to aid in this analysis using enemy unit locations from the EOB file, friendly unit locations from the TD file, and the terrain data. They might also retrieve weather data from a TOS staff working file, if it is kept there, and might confer directly with weather element personnel to determine such factors as the likelihood of fog in certain areas, cloud cover, and moonlight that might aid or hinder enemy reconnaissance patrol activity. The most likely routes would be reported as part of the CI annex to the OPORD, in the CI portion of the intelligence summary staff working file, or as frag orders through the G3 to the units along the infiltration routes.
- Manual - CI control element personnel might determine the enemy's surveillance capabilities from documentation and from discussions with ATSE personnel. They would report these in the CI annex to the OPORD, in the CI portion of the intelligence summary staff working file, and in notes for the commander's briefing.
- TOS assisted - CI control element personnel might determine the location of enemy intelligence collecting electromagnetic devices from ESD messages and from discussions with ATSE personnel. They might plot the coverage of these devices on the graphics display containing friendly unit locations. Allowing for terrain masking and weather effects, they then could determine approximately what the enemy can "see" of friendly locations and movements. CI control personnel might attempt to determine the timing and routes of flown enemy

aerial reconnaissance flights and ground patrols from ESD messages reporting such events. They could trace these routes over their graphics display to determine what the flights and patrols might have recorded. They will get copies of SIGSEC reports that tell what friendly information was passed via non-secure voice communications. They might attempt to determine the likelihood that the enemy intercepted this information from the known location and capabilities of enemy signal intelligence devices. From this entire analysis they would attempt to piece together what the enemy probably knows, or believes, about us. They would report this information in notes for the commander's briefing, in briefings of the G2 and G3, and maybe in G2 approved ESD input messages.

- Manual - CI control personnel will use their knowledge of the enemy's intelligence collection capabilities and their personal experience and training to develop recommendations for countermeasures that will thwart the enemy's collection attempts. These recommendations will be reported in the CI annex to the OPORD, in the CI portion of the intelligence summary staff working file, in notes for the commander's briefing, and as frag orders through the G3 to the affected units.
- Manual - The CI officer will use his knowledge of the enemy's intelligence collection capabilities and activities to assist the G3 in planning cover and deception operations. These recommendations will involve methods of avoiding or deceiving the enemy's collection devices and personnel.

OUTPUTS

The outputs of this task include TOS ESD input messages, updates to the TOS intelligence summary file, inputs to the OPORD CI annex, notes for the commander's briefing, and G3 frag orders. Also output are verbal recommendations and TOS graphics displays.

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MANUAL TASK

ELEMENT: G2 CI Control Main

FUNCTION: Provides counterintelligence inputs to operational planning.

TASK: Participates in the intelligence aspects of planning psychological operations.

FREQUENCY ESTIMATE: Rare

CRITICALITY: 2

DUTY POSITION: CI Officer, CI Special Agent

INPUTS

- Existing army studies on the economic, political, and social makeup of the host country
- Black, grey, and white list indicating which local organization are friendly, which are hostile, and which are of unknown loyalties
- Personal training and knowledge of CI personnel

OUTPUTS

Verbal information concerning population characteristics and attitudes and enemy agents and organizations in the area. Also, recommendations.

COORDINATION

Inputs: None. Use existing data.

Outputs: • G3 or his representative
• G5

NOTES

- Psychological operations are actions undertaken to foster a positive attitude of the local population toward friendly forces or actions taken to demoralize the enemy forces.
- CI personnel would only be concerned with the intelligence aspects of such operations.
- This task does not qualify for TOS interaction. None of the inputs are expected to be contained in TOS and the outputs require the flexibility of verbal interaction.

PERSONNEL

TABLE 12.
CI Control Element Manning

Recommended Manning Under TOS			
<u>Title</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
Counterintelligence officer	03/02	36A	2
CI special agent	E8/E7	97B	<u>2</u>
Total Officers/Enlisted Men			2/2

This table depicts the manning a division might employ to sustain 24-hour operations in a tactically deployed element using TOS. The recommendation does not provide for relief or replacement personnel.

The doctrinal manning reference did not contain any counterintelligence personnel in either the G2 section or the combat intelligence company augmentation. Thus no doctrinal basis of comparison is provided for this element. The investigated division had one CI officer (03), one CI special agent (E8), and a clerk typist (E5) assigned to the CI control element. It is felt that one CI officer and one CI special agent are required per shift to sustain continuous operation. TOS should actually increase the amount of analysis performed by this element due to its data manipulation capabilities. The almost full time analysis requirements, interaction with CI field teams, and relief requirements would seem to justify two men per shift. The clerk/typist was not included in the recommendation as his function at the investigated division was to maintain the manual records kept by the element. The majority of these records should not be required under TOS. Those remaining could be maintained by the two CI special agents.

If CI control element personnel are given access to a TOS console, then it is recommended that both the officer and the enlisted man on a crew be capable of operating the console, regardless of the physical configuration of the element. This will guarantee coverage if one crew member must be absent from the command post for a prolonged period.

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RECOMMENDATIONS

Provide an additional TOS console dedicated to the use of CI control element personnel.

Under the current TOS hardware configuration, the CI control element is not assigned to a TOS console. It is recommended that the CI control element be provided with their own TOS console within the main command post tactical operations center.

The justification for this recommendation is the amount of TOS interaction anticipated for the CI control element. CI control acts as a collection agency. They should receive tasking through the CM&D TOS intelligence collection management function. They will use the TOS data base to keep abreast of the current enemy and friendly situation in order to develop their own tasking for CI field teams. It is felt that CI control element personnel can use the TOS data base to great advantage in determining patterns of enemy intelligence collection, sabotage, and subversion activities in much the same manner as A&P personnel develop patterns of enemy activity. They could also use TOS information as an aid in determining the most likely infiltration routes for enemy reconnaissance and sabotage activities. Most importantly, the amount and kinds of information stored in TOS and the TOS data manipulation capabilities will give CI control personnel the opportunity to do a credible job of determining "how the enemy sees us." CI control element personnel can integrate the TOS information on friendly unit locations and activities and enemy reconnaissance and surveillance locations and activities to aid in estimating what the enemy probably knows, or believes, about our activities and intentions. CI control personnel will report their information and intelligence via TOS ESD input messages and the intelligence summary staff working file, if one is kept.

There is, however, disagreement as to the amount of analysis CI control element personnel are capable of at the division level. It may be that their activity in a tactical situation would be limited to providing direct operations security support. If this is true, then they would have no need for a dedicated TOS console. It is felt that the potential use of TOS by CI control element personnel is great enough to warrant investigation of tactical CI control element operations in several divisions to determine the range of the analysis function.

Develop a software analysis package for CI control element use.

The current TOS design does not contain any automatic data processing routines that will perform analytical functions to aid the CI control element in their analysis effort. The current TOS aids to counterintelligence analysis are pretty much limited to storing data and accessing the stored data by various methods to produce displays and printouts.

It is recommended that a limited counterintelligence analysis package be developed for TOS that would follow the same expanding development cycle as that recommended earlier for an A&P analysis package. A relatively simple analysis package would be developed first and then expanded based on the results of the original package and on user suggestions. There are two areas that might prove to be candidates for a limited counterintelligence analysis package:

- Enemy intelligence collection pattern analysis. This routine would use ESD file entries concerning enemy intelligence collection activities plus additional inputs concerning the location of enemy electromagnetic collection devices to predict the probable goals of the enemy's collection activities and the most likely future activities. The EOB and TD files would be used to relate enemy and friendly unit locations to the enemy's collection activities. The TER file might be used to relate key terrain and other terrain features to the enemy's collection activities. Development of the prediction algorithm would require information on the enemy's intelligence collection doctrine.
- Determination of what the enemy knows about us. This routine would use ESD file entries reporting enemy intelligence collection activities, inputs concerning the location and type of enemy electromagnetic collection devices, and TD file data on the location of friendly units to estimate what the enemy knows about us. In addition, the operator might input planned and executed friendly troop movements to permit estimates of the likelihood that the enemy detected the movements. The routine would require the prestoring of at least the range capabilities of various enemy collection devices. Eventually, it might take into account terrain masking and weather effects to increase its prediction validity.

The justifications for this recommendation are:

- The human analysis of the large volume of data expected to be available through TOS interaction should prove difficult for any analyst. If algorithm routines are carefully designed and tested, they should be able to take into account larger volumes of data and more relationships than could an individual counterintelligence analyst. However, the output of the routine should indicate the factors used in deriving conclusions so human judgement might override erroneous conclusions.
- The machine should be able to derive conclusions more rapidly than the human analyst if the volume of input is large and the software routines are well designed. The modern army must be able to react quickly due to the mobility of the battlefield.
- The more accurately and rapidly we can determine the enemy's intelligence collection goals and what they are capable of gathering concerning our operations, the more effective we should be in planning operations and countermeasures to thwart or deceive their intelligence collection efforts.

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As was stated under the preceding recommendation, there is some doubt concerning the amount of analysis that would be performed by CI control element personnel at the division level. It is felt that the potential benefits of the analysis discussed above are great enough to warrant further investigation into the range of their application.

AIR FORCE WEATHER ELEMENT

GENERAL

The division weather element is manned by United States Air Force (USAF) weather specialists and supervised by a USAF staff weather officer (SWO). In the investigated division, the SWO, a weather forecaster, and a team of weather observers work in the main command post. It is apparently not uncommon for the SWO and at least one assistant to be located at the main command post to facilitate operational planning, although the majority of weather element personnel are typically located at the division air field.

MISSION

The mission of the weather element is to provide weather support to division organizations through the collection, analysis, and dissemination of weather data and to provide weather and climatological expertise to aid in planning division operations.

OVERVIEW OF TOS OPERATIONS

Regardless of the physical location of weather element personnel, they should have access to a TOS console. Under the current TOS hardware configuration, the aviation battalion will have a TOS console at the division airfield. The weather element TOS inputs suggested in this section might be made through this console either by weather element personnel or by aviation battalion personnel. If the SWO and some element members are located at the main command post, the CM&D, R&S, or some other G2 console might be used to input weather data. Again, this could be done by weather element personnel or the normal console operator. If all the TOS staff working file weather records recommended below are kept, it should amount to an average of eight TOS interactions per 12-hour shift, each of which would consist of updating one staff working file record.

As was suggested in the A&P element description, weather element personnel could provide data for maintaining current weather information in an intelligence summary TOS staff working file. At least four separate weather records might be maintained: present weather conditions, current weather forecast, light data covering the mission period, and estimated weather effects on friendly and enemy force operations. These records could be retrieved individually or as a group by any TOS user needing the information for planning purposes. Maintaining such data in a staff working file should greatly reduce the number of information requests received by the weather element, provide a more or less permanent and stable storage location for such data, and eliminate errors resulting from copying this information over voice communications channels. On the negative

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side, it will increase the number of TOS interactions, take up machine storage space, and negate the immediate dissemination of weather reports to division units that occurs when FM radio transmission is used.

The division weather element should not have any additional interactions with division TOS although some additional interactions with corps TOS might be identified when that system is fully defined. Otherwise, TOS will not provide any inputs to the weather element or aid in the analysis of weather information. It should also be remembered that the interactions mentioned above and in the task descriptions are merely suggestions. TOS was not developed to support the weather element and even if the suggested TOS outputs are kept, it might prove better to have another element perform the actual TOS interactions using data provided by the weather element.

FUNCTIONS AND TASKS

Functions and tasks performed by the USAF weather element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 13.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

TABLE 13.
Air Force Weather Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	Staff		Chief	
	Weather Officer	Weather Forecaster	Weather Observer	Weather Observer
Provides weather support to the division commander and staff.				
Reports weather conditions in the division area and adjacent areas of interest.	X	X	X	X
Advises the division staff on matters pertaining to weather.	X	X		
Provides weather support for division elements.				
Provides fallout wind forecasts and low level weather forecasts for the division chemical element.		X		
Exchanges upper air observations with the artillery meteorological element.			X	X
X - Manual Task				

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MANUAL TASK

ELEMENT: G2 Weather Main

FUNCTION: Provides weather support to the division commander and staff.

TASK: Reports weather conditions in the division area and adjacent areas of interest.

FREQUENCY ESTIMATE: SWO = 80% of time
Forecaster = 80% of time
Weather Observer = 85% of time

CRITICALITY: 2

DUTY POSITION: Staff Weather Officer, Weather Forecaster, Chief Weather Observer, Weather Observer

INPUTS

- Mission weather information needs gained from the mission briefing or from the G2
- Readings from weather instrumentation at the division weather station(s)
- Complete weather forecast bulletin received twice daily from the corps central forecasting unit
- Observations and advisories from adjacent divisions and lower echelons

OUTPUTS

- Normal forecast briefing given twice daily, including weather overlays and charts
- Normal weather report put out twice daily for the lower echelons. This could be done using a TOS staff working file.
- Weather advisories. Weather watch if severe weather might occur. Weather warning, if severe weather exists somewhere in the area. Weather watches are free text, weather warnings are structured. They are transmitted to division elements and lower echelons.

COORDINATION

- Inputs:
- Corps central forecasting unit
 - Other division weather elements
 - Field weather observers
 - G2 staff for mission details

- Outputs:
- Division staff briefing attendees
 - Any division element or unit for receipt of weather reports and advisories
 - Weather data kept in a TOS staff working file would be available to any TOS user via the query capability

NOTES

- The chief weather observer and weather observers take local readings of temperature, barometric pressure, wind direction and velocity, and humidity every two hours. In the investigated division, local conditions are posted on a side panel of the CM&D situation map.
- The SWO or the forecaster edits out those portions of the corps bulletin that do not apply to the division's area of operation. Detail is added based on specific terrain features such as soil conditions or likelihood of fog in low lying areas.
- The investigated division does not have sufficient aviation assets to issue aviation weather forecasts. These would be like normal weather bulletins but would contain additional "winds aloft" data.
- Under TOS, the normal twice daily weather report and local weather conditions could be output in a TOS staff working file. All normal recipients of the weather report should have access to a TOS console and could obtain the latest weather report by querying the weather report record in the staff working file. Current local conditions could be kept in a present weather conditions record. It is suggested in the A&P element description that the weather report and present weather conditions be part of an intelligence summary staff working file. The justifications for this suggestion are that it avoids errors in copying weather report data over voice communications channels and provides a more or less permanent storage of current weather that would be available when it is needed.
- If the entire weather element is located at the division airfield, then weather or aviation element personnel could input the weather report through the TOS console at that facility. If the SWO and other element members are located at the main command post, then they might either enter the report themselves through some available G2 console or give it to the normal console operator for insertion.
- It is recommended that severe weather advisories still be transmitted over voice radio channels because of the time criticality for dissemination of these advisories. Aviation weather would be provided directly to the aviation battalion colocated with weather personnel at the division airfield.

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MANUAL TASK

ELEMENT: G2 Weather Main

FUNCTION: Provides weather support to the division commander and staff.

TASK: Advises the division staff on matters pertaining to weather.

FREQUENCY ESTIMATE: Once per duty shift

CRITICALITY: 2

DUTY POSITION: Staff Weather Officer, Weather Forecaster

INPUTS

- Task stimulus is a verbal request for special weather information usually input by the G2 staff
- Climatological source books
- Information not available to the division weather element is obtained through the corps central forecasting unit
- Mission briefing and the G2 copy of the OPORD giving details of the mission used to relate weather factors to mission particulars

OUTPUTS

- Verbal or handwritten informal answer to inquiry
- Verbal advice to staff members
- Might output light data and estimated effects of weather on friendly and enemy force in an intelligence TOS staff working file

COORDINATION

- Inputs:
- G2
 - Sometimes the medics might make requests if there is going to be a troop march and they need to know how the weather might affect troop health.
 - Any element might request information, but they normally do so through G2 channels.
- Outputs:
- Report given to requester, normally through the G2
 - Verbal advice given to any staff member
 - Data kept in a staff working file would be available to any TOS user via the TOS query capability

NOTES

- Typical requests include those for light data for specific future dates and requests for ceilings and visibility data. Division engineers may make special requests for snow levels and conditions, flooding, or other traffic-ability effects of weather.
- Often the SWO will take the initiative to offer advice when it is not solicited. He knows the details of the mission and judges the effects of the weather upon it. He may offer such advice as the placing of installations or troops to avoid the effects of flash flooding.
- It is envisioned that the weather element will not be tasked through TOS intelligence collection tasking messages coming from CM&D. The responses to the types of requests going to the weather element would not typically result in ESD input messages and thus would be difficult for CM&D to monitor. Hopefully, the SWO will be present when the division OPORD intelligence annex is being developed and many requests can be delivered at that time. For the most part, specific requests during the mission should be submitted and answered via voice communications.
- Under TOS, the most commonly required weather data such as light data for the mission period and ceilings and visibility might be kept as separate records in the intelligence summary TOS staff working file. Also, an estimate of the effects of the forecasted weather on friendly and enemy force operations might be kept in a separate record of this file. This should eliminate many requests and make this common data immediately available to any TOS user.

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MANUAL TASK

ELEMENT: G2 Weather Main

FUNCTION: Provides weather support for division elements.

TASK: Provides fallout wind forecasts and low level weather forecasts for the division chemical element.

FREQUENCY ESTIMATE: Presently, 2 times per duty shift (see notes)

CRITICALITY: 2

DUTY POSITION: Weather Forecaster

INPUTS

- Wind profile bulletin from corps control forecasting unit containing wind direction and velocity for every 1,000 meters from the surface to 40,000 meters
- Local surface wind data used to modify the 1,000 and 2,000 meter readings to match local conditions

OUTPUTS

Wind profile bulletin passed to the division nuclear, biological, and chemical (NBC) element after local modification of surface wind data

COORDINATION

Inputs: Corps central forecasting unit

Outputs: Division NBC officer

NOTES

It is anticipated that DIVARTY's TACFIRE system will do the fallout calculations presently done by the NBC element when that system is operational. This task should no longer be required under TACFIRE if DIVARTY's meteorological section can provide the required fallout winds.

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MANUAL TASK

ELEMENT: G2 Weather Main

FUNCTION: Provides weather support for division elements.

TASK: Exchanges upper air observations with the artillery meteorological element.

FREQUENCY ESTIMATE: 2 times a week. More frequently if communications can be established.

CRITICALITY: 3

DUTY POSITION: Chief Weather Observer, Weather Observer

INPUTS

- Requests from DIVARTY for weather data they cannot obtain, usually because of equipment or communications failure. Their most common need is for winds for ballistic correction.
- Request from weather element to DIVARTY for weather data for same reason as above

OUTPUTS

Teletyped data or a coded radio message

COORDINATION

Inputs: DIVARTY

Outputs: DIVARTY

NOTES

- The USAF weather element and the meteorological element of DIVARTY would routinely exchange forecast data if communications lines could be established, which is very difficult under battlefield conditions. Without direct communications, the exchange of data could take as much as 1½ hours.
- The weather observer must decode the weather data received from DIVARTY.

PERSONNEL

TABLE 14.
USAF Weather Element Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>AFSC*</u>	<u>Number</u>	<u>Grade</u>	<u>AFSC*</u>	<u>Number</u>
Staff weather officer (USAF)	O4	2516	1	O4	2516	1
Weather forecaster (USAF)	E7/E6	25370	2	E7/E6	25370	2
Chief weather observer (USAF)	E6	25271	1	E6	25271	1
Weather observer (USAF)	E5/E4/E3	25251	<u>10</u>	E5/E4/E3	25251	<u>10</u>
Total Officers/Enlisted Men			1/13	1/13		

*Air Force speciality code

This table depicts the manning a division might employ to sustain 24-hour operations in a tactically deployed manual element and the manning proposed for the element to sustain 24-hour operations using TOS. The recommendations do not provide for relief or replacement personnel.

TOS is not expected to have any impact on the personnel requirements of the division USAF weather element. TOS is not expected to perform any of the tasks currently done by this element nor is it expected to add any new tasks or significantly increase the performance requirements for existing tasks. The only TOS interactions recommended for the weather element involve using TOS as a means of storing and disseminating weather data and these interactions might be performed by another element depending on the physical location of weather element personnel.

It is suggested that at least the weather forecasters receive sufficient TOS on-the-job training to update the staff working file, if weather data is maintained in such a file. This would be true even if the inputs were normally made by another element because it would provide some internal weather element capability as backup. The weather forecaster is suggested because he should have more knowledge of all the TOS weather inputs than do the weather observers.

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RECOMMENDATIONS

No additional TOS capabilities aimed specifically at enhancing the weather element's operation seem desirable at this time.

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OPERATIONS ELEMENT (G3)

GENERAL

The G3 element, supervised by the assistant chief of staff for operations, G3, has personnel located in the division main command post and the division tactical command post. The location of the G3 at any given time depends on the tactical situation and the desires of the commander, but he is normally at the tactical command post with the division commander.

The G3 element is responsible for monitoring combat operations and the development and coordination of detailed tactical planning. The element has overall responsibility for supervision and coordination of the functioning of the tactical operations center and for consolidating, coordinating, and approving at the division level all preplanned airstrike requests, use of combat support, allocation and assignment of special weapons, priorities for allocating critical resources, command standing operating procedures, operational records and reports, operations plans, task organization, and the operational estimate.

MISSION

The mission of the G3 is to administer, report, and plan the division's operational requirements necessary to support the division's stated missions, objectives, and maneuvers.

OVERVIEW OF TOS OPERATIONS

The G3 element will share a location in the division main tactical operations center with personnel from G1, G4, FSE, DAME, and TACP. The G3 element will use the operations and plans TOS consoles to:

- conduct operations order development and dissemination
- perform future and contingency planning
- maintain a current estimate
- satisfy corps reporting requirements
- develop task organization
- process priorities of preplanned requests for air support.

The terminals will also be used to display, print, query, SRI, and update the TOS data base (FRENST) for operational information bearing on the tactical situation.

The G3 element will use the TOS consoles to extract current enemy and friendly situation information and planning guidance from the data base in order to

generate a subset of the division operations order. The subset is defined as the operations overlay and the first five paragraphs of the operations order. TOS capabilities of data base access, update, graphics, and transfer capabilities will be used to accomplish this development. Once it is developed and approved, the operations order can be distributed using the TOS distribution capability. Selection of the operations order development as a TOS assisted task was a logical one because of its high priority. Although the complete operations order will not be developed using TOS, the most immediately essential information such as the operations overlay and first five paragraphs of the operations order will be produced to assist planners in developing and organizing the current operation. TOS will also allow planners to readily prepare and issue fragmentary changes to the operations order when it is completed. The capability also exists to transmit the operations order and fragmentary order to all addresses simultaneously. TOS will provide tactical planners the capability to develop, on console, future courses of action to satisfy corps guidance, in response to commander's guidance, and probable missions. Graphically developed courses of action may be assembled, stored in the planning file, and briefed to the commander using the large screen display system. The course of action selected for implementation may be stored for future consideration. When implemented, the plan may be accessed and distributed in the same manner as an operation order. Contingency planning will be a TOS assisted task because it is an ongoing or continuous task to be accomplished by operations personnel and can easily be accommodated by the graphics and display capabilities of TOS. The graphics and free text capabilities of TOS will be invaluable to the staff officer in generating and storing courses of action to varying situations within the division. These courses of action can be displayed pictorially to the commander or the G3 to facilitate decision making and implementation. Operations personnel will use TOS to maintain a current operations estimate by querying and establishing SRIs against the TOS data base. Assembled data may be displayed graphically or stored in a staff working file for future reference. The graphics display may include enemy and friendly front line traces, boundaries of all echelons, command post locations, tactical maneuvering positions, nuclear and chemical strikes, and key barriers and obstacles. Additional data may also be stored and overlaid in accordance with the commander's desires. The procedures for displaying this estimate to the commander could be prearranged by standing operating procedures and prepared in advance for the commander's briefing. The operational crew will have control over the category of data displayed. This task qualifies for TOS assistance because of its high priority and because of the large amount of data which must be screened, evaluated, and presented to the commander and staff for consideration and subsequent reaction. This task when appropriately handled should provide the commander adequate surveillance over the battlefield which is a prerequisite for the conduct of operations.

The application of TOS to the division command post operation has almost eliminated division to corps reporting. The center-to-center computer capability should eliminate most existing corps reporting requirements and those

that remain will probably be manually developed but processed through TOS. Most notable of those is forces status report (FORSTAT). The ability of corps to query or SRI the division data base should provide adequate data for corps operations. Additional data requirements of corps can be developed and provided using the graphics display and free text capability of TOS. This task was not selected for TOS assistance but will be affected by the data processing capability provided with TOS. A large part of the division data base which was transmitted manually to corps will now be processed by TOS to corps and updated automatically using the query and SRI routines. The few remaining manual reports can be generated and distributed more rapidly and efficiently using TOS capabilities.

Task organization generation is a capability of TOS used initially during operations order generation. The basic troop list duties can be collected, filed, displayed, and disseminated to provide an up-to-date record of all units assigned to the division. Operations staff officers will be able to input, maintain, and output data on a unit, its subordinate unit task organization, and its task force organization. The unit will be responsible for the maintenance and accuracy of its unit file. The troop list will be preloaded in the system software and staff officers will be required to enter only nonorganic corps units or other units assigned or attached since the troop list was preloaded. The task organization change can be loaded to be effective upon insertion or loaded into a pending file if the time for implementation is greater than 30 minutes. A task organization change capability will be used by staff officers to report and record changes in command relationships and support missions of division units as required by the current operations order or fragmentary orders. Task organization was selected for TOS assistance because of its high priority and utility at all echelons. The task organization will be accessed and used to support operations order generation or to produce fragmentary changes.

The processing and roll up of preplanned air support requests can be accomplished using the TOS staff working file capability. Brigades will be responsible for rolling up battalion and brigade requests into one prioritized list and updating the staff working file established at division by the G3 air. It is estimated that each flight request can be handled by one record within the staff working file. When requests are received at division, operations personnel will review each brigade's request and priority, add division requirements, and reprioritize if applicable. Corps G3 air will query the division file, prioritize the request on corps requirements, and transmit the approved list to the Direct Air Support Center (DASC). It will be incumbent upon corps to update the division staff working file with the approved flight list when it is completed and consolidated by the DASC. Division operations personnel must be notified by relay message or voice when the file has been updated. Echelon roll up procedures need to be developed and established by standing operating procedures. The processing of preplanned air requests was selected as a TOS assisted task because of its criticality to operations and the fact

that it is conducted daily. TOS assistance should aid immeasurably in decreasing the amount of time to process the requests and receive approval from the DASC. By using TOS, operations personnel will be able to delay developing and submitting their requests for air strikes to the last possible minute, improving the target selection for air sorties.

TOS will provide the basic capability to handle routine supporting tasks required of operations personnel, such as accomplishing required internal distribution, preparing frag orders, preparing warning orders, obtaining approval for selected publications and reports, and maintaining a log of activities or events. The majority of these activities can be accomplished by the graphics or free text capabilities which allow operators to develop orders, publications, and selective reports. These data can then be transmitted to the required addressees by selecting the appropriate matrix for distribution or specifying one. Outputs of all tasks accomplished or events received can be output to the printer for retention and organized into a permanent record of activities. Items such as classified logs and maintenance of standing operating procedures will continue to be manual tasks accomplished as they have been in the past.

The TOS consoles will be used to:

- query the data base for information of interest to staff users
- establish SRIs which will notify the operator when a significant piece of information of interest has arrived
- update or delete information from a file for which G3 has responsibilities
- maintain an appropriate display for the G3
- establish staff working files to accomplish a given operational assignment.

These tasks will be TOS assisted only because they are supportive of other tasks of higher priority and work load and not because of their stated criticality or frequency. Tasks such as maintaining displays, files, and reports are considered high priority and lend additional justification for automated support. Data base management is also a high priority item which does necessitate TOS assistance. To support the system, operations staff personnel will be required to conduct the basic tasks of moving the system, reinstalling it, completing the communications hookup, powering up the console, inserting paper in the printer, performing system checkouts to insure a good operating system, and performing malfunction reporting as required.

The impact of TOS on the G3 element and its responsibilities and tasks is impressive, but many important tasks still remain to be accomplished manually. Most notable of these are:

- developing operations order annexes
- processing command FM net information
- processing immediate air requests
- preparing the operations journal.

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Although these tasks and functions have been identified as basically manual in nature, many of them will be affected by TOS in that data base information could and probably will influence their performance.

FUNCTIONS AND TASKS

Functions and tasks performed by the G3 element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 15.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 15.
G3 Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	Officer In Charge	Shift Officer	Operations Sergeant	Ra Ta Op
Prepares operations plans and orders.				
Conducts tactical planning to include supervision and coordination of supporting annexes which become part of the overall tactical plan.	(X)	(X)		
Prepares, coordinates, and publishes (after command approval) operations plans and orders.	(X)	(X)	X	
Prepares, coordinates, and publishes, as appropriate, future and contingency plans.	(X)	(X)		
Maintains a current estimate of the situation in coordination with other staff sections and higher headquarters.		(X)	(X)	
Submits required reports to corps.				
Plans, coordinates, supervises, and evaluates ECM support to tactical operations and deception plans, resolves ECM-ESM conflicts (G2) and coordinates approved ECM operations with higher, lower, and adjacent units to insure mission capabilities.				
Recommends the organization and equipping of units and estimates the number and type of units to be organized. Compiles and maintains the troop list (including review and revision) to insure that the number and types of units assigned are those which can best accomplish and support the mission.	(X)	(X)	(X)	

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Tasks

Radio Telephone Operator	Journal Clerk	G3 Air Officer	G3 Air NCOIC	Reports Officer	EW Officer
X	X			(X)	
				(X)	
					X

X

X

(X)

(X)

X

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TABLE 15. (Continued)
G3 Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	Officer In Charge	Shift Officer	Operations Sergeant	Radio Tele Oper
Plans and coordinates tactical troop movements.	X			
Plans air support.				
Reviews, evaluates, and coordinates requests for preplanned close air support missions.				
Prepares the close air support portion of plans and orders as required.				
Performs administrative duties.				
Types and distributes messages and documents.		(X)	(X)	
Coordinates administrative publication actions to insure timely production of finished operations documents.			X	
Maintains the classified log.		X	X	
Supervises the maintenance of the division tactical SOPs.				
Coordinates the activities of assigned and attached liaison personnel.	X	X		
Coordinates the TOS data base access, management, and security matters with the SYSCON.	(X)	(X)	(X)	
Performs the hookup, energizing, initialization, and checkout of the TOS console.		(X)	(X)	

X - Manual Task

(X) - TOS Assisted Task

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Task Tasks

Radio Telephone Operator	Journal Clerk	G3 Air Officer	G3 Air NCOIC	Reports Officer	EW Officer
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(X) (X)

X X

(X)

X X

X

X X

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TOS ASSISTED TASK

ELEMENT: G3 Main

FUNCTION: Prepares operations plans and orders.

TASK: Conducts tactical planning to include supervision and coordination of supporting annexes which become part of the overall tactical plan.

FREQUENCY ESTIMATE: Once per day

CRITICALITY: 1

DUTY POSITION: Plans Officer, Shift Officer

INPUTS

Generation of the operations order is initiated by command guidance to the G3 and officer-in-charge. Guidance includes:

- Corps or division mission objectives
- Type of mission
- Task organization
- Timetable
- Additional assets

Additional planning data which may be considered for input to the task include:

- Mission - assigned by corps or originated by division
- Terrain - observation, obstacles, cover and concealment, fields of fire, avenues of approach
- Weather - effect of visibility
- Enemy - strengths, dispositions, capabilities, tactics
- Forces available - combat forces, fires, combat support, combat service support
- Force capability - status of forces

COORDINATION

- Principal coordination in the development stage will be with the G2 to obtain intelligence preparation of the battlefield data.
- Intermediate coordination could occur with any principal staff member prior to the concept of operations briefing.

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access

- Graphics
- Data transfer
- File update
- Attention device and threshold selection

PROCEDURES

- Manual - G3 will provide guidance and task the generation of the operations order.
- TOS assisted - The plans officer and shift officer will query corps data base to obtain all available planning guidance relative to the operations order.
- TOS assisted - The plans officer and shift officer will access and assemble planning data from the TOS data base. This can include but is not limited to: tactical dispositions file, task organization file, staff working files, display files, unit operations report file, and battlefield information report file. Coordination with the G2 at this point is appropriate to obtain intelligence preparation of the battlefield data either manually or from TOS by query of the EOB and TER files. Some planning data like weather, for example, may have to be assembled manually.
- Manual - The officer-in-charge and plans officer will develop the overall concept and basic order.
- TOS assisted - The plans officer will initiate the TOS graphics capability to develop and generate:

The operations overlay which can contain boundaries, coordinating plans, type of attack, basic situation, major avenues of attack, layout of maneuvering brigades, and reserve location. The overlay will be developed using the planning work file capability in the tactical dispositions file.

The first five paragraphs of the operations order. These five free text paragraphs will be prepared and stored in the unit operations report file.

- TOS assisted - The plans officer will store the overlay operations order text data in the appropriate file.
- TOS assisted - The plans officer or the shift officer will access and set display criteria for previewing the course of action on the large screen display.
- Manual - The G3 will brief the commander and staff on the proposed course(s) of action (concept of operations briefing).
- TOS assisted - The plans officer will update the operations overlay and free text portion of the operations order based on the commander's guidance.
- TOS assisted - The plans officer will store the finalized operations overlay and first five paragraphs of the operations order in the unit operations report file.

OUTPUTS

The outputs of this task are the development, briefing, and finalization of the basic operations overlay and the first five paragraphs of the operations order.

NOTES

- The initial development of the overlay and first five paragraphs of the operations order allow operations personnel to rapidly disseminate the basic mission, overlay, and general planning data relative to the emerging operation. The final operations order, complete with all of its annexes, will arrive later but it is assumed that lower echelon staff personnel will have begun planning in accordance with the early release of operations order data. This approach is based upon the task criticality and the number of times the operations order will be generated and amended.
- The officer-in-charge and the plans officer will do the bulk of the work. They will hold skull sessions and coordinate with the staff and liaison personnel as required to develop the recommended courses of action. The G3 will select the best course of action for presentation to the commander or the chief of staff.
- Supporting annexes will be developed separate from this task in a follow-on effort but without support from TOS.
- Fragmentary orders to the new operations order can be developed in a similar manner using the graphics capability of the tactical dispositions file and the free text and distribution capability of the unit operations report file.
- The development of the task organization is also an integral part of operations order development.

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TOS ASSISTED TASK

ELEMENT: G3 Main

FUNCTION: Prepares operations plans and orders.

TASK: Prepares, coordinates, and publishes (after command approval) operations plans and orders.

FREQUENCY ESTIMATE: Once per day

CRITICALITY: 2

DUTY POSITION: Officer-in-Charge, Staff Officer, Operations Sergeant

INPUTS

This task is a continuation of the previous task and is initiated upon input of:

- Command guidance
- Draft operations order
- Operations overlay
- Annexes

COORDINATION

- The plans officer will receive and integrate the annexes from the various agencies, resolve conflicts where they might occur, and assemble the annexes.
- The operations sergeant will coordinate and assist the plans officer as required.

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- Data transfer
- File update
- File access

PROCEDURES

- TOS assisted - The officer-in-charge will determine the distribution for the order and provide it as guidance to the plans officer. The operations sergeant will access the distribution matrix via the TOS console and assign the distribution as directed by the plans officer.
- TOS assisted - When directed by the officer-in-charge, the plans officer will use his console to transmit the newly developed operations order to all addressees.

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- TOS assisted - After transmitting the new operations order and overlay, the plans officer should print it and purge the old one for the record.
- Manual - The operations sergeant will insure distribution of the basic order with all pertinent annexes to the staff, higher, and lower by courier.

OUTPUTS

The output of this task results in a distribution being established for the operations order and culminates in its being distributed to all addressees. Upon execution of the new operations order by the plans officer, the old operations order should be purged. The task organization and control measures relevant to the operations order should also be purged and updated to reflect the new order. A complete operations order with all supporting annexes will be developed and distributed manually.

NOTES

- When the new operations order has been initiated, a hardcopy of the existing one should be output to the printer of G3 plans for recording or filing in the journal by the operations sergeant.
- Principal staff personnel and liaison agencies will produce and deliver completed annexes and overlays to the plans officer. Among the staff personnel and liaison agencies involved are G1, G2, G3, G4, G5, FSE, NBC, ADA, SIG, EW, air liaison officer, and assistant division engineer.
- The operations sergeant will insure that the total operations order is typed and that the overlays are produced in sufficient quantities. The order is assembled, approved by the staff, and transmitted to all headquarters, higher and lower.
- The task of manually purging and deleting old records referring to the previous operations order and companion file data, such as the task organization, operations overlay, and control measures, could more quickly and efficiently be performed by the computer and might be considered for future program modifications.

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TOS ASSISTED TASK

ELEMENT: G3 Main

FUNCTION: Prepares operations plans and orders.

TASK: Prepares, coordinates, and publishes, as appropriate, future and contingency plans.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 3

DUTY POSITION: Plans Officer

INPUTS

Guidance by the G3 will initiate the task. Inputs will be generated by:

- Implied missions in the operations order
- Potential missions
- Envisioned missions from known corps objectives

Additional planning data may also be input by the commander and would generally be similar to that provided for an operations order.

COORDINATION

- Intermediate coordination could occur at anytime with the principal staff and liaison personnel.
- Completed course of action will be reviewed with the officer-in-charge or the G3.

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics
- File update

PROCEDURES

- Manual - The plans officer will receive commander and G3 guidance for future or probable missions.
- TOS assisted - The plans officer will query the corps operations order to obtain all the available guidance relative to the division concerning the assigned guidance or interpreted mission.

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- TOS assisted - The plans officer will initiate a prestored query to assemble planning data from the TOS data base. The use of the prestored query is suggested because this step is repeated in other tasks. Access could include but is not necessarily limited to current operations order, tactical dispositions file, battlefield information report file, operations report file, intelligence preparation of the battlefield file, and any relevant staff working file.
- TOS assisted - The plans officer will use the graphics capability of the tactical dispositions file to generate the required overlays or the free text capability in the unit operations report file to satisfy G3 guidance for future planning.
- TOS assisted - The plans officer will store the course of action in the tactical dispositions or unit operations report files for future access and coordination with the G3 and other staff officers.
- TOS assisted - The data developed must be displayed on either the console or the large screen display for briefing the staff or the G3.
- TOS assisted - If required, the plans officer will re-enter graphics to update the planning data and store for future reference.

OUTPUTS

The output of this task is a set of probable courses of action developed and stored to satisfy planning directives from the G3. These tentative plans may be shared with other staff officers, briefed to the G3, or held in abeyance for future consideration.

NOTES

- The definition, availability, and size of file space for this planning activity need to be determined and explained.
- The sequence of operational planning and war gaming are essentially the same. The major difference is in the formalization and distribution of data. These data would not appear on the normal situation display used by the operational crews to monitor tactical operations but will be held in display files for immediate display to the commander and the G3.

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TOS ASSISTED TASK

ELEMENT: G3 Main

FUNCTION: Prepares operations plans and orders.

TASK: Maintains a current estimate of the situation in coordination with other staff sections and higher headquarters.

FREQUENCY ESTIMATE: 12 per day

CRITICALITY: 2 or 3

DUTY POSITION: Shift Officer, Operations Sergeant, RTO, Journal Clerk

INPUTS

This task is ongoing and requires the operations staff to maintain, store, and display data necessary to describe the current tactical situation within the division. Inputs include but are not limited to:

- Friendly and enemy front line trace
- Boundaries
- Geographical references
- Command post locations
- Tactical maneuvering positions
- Chemical and nuclear strikes
- Minefields and barriers
- Significant events

Considerable data will be provided by the lower echelons through the TOS consoles. Division personnel must decide what data best describes the situation and how to portray it.

COORDINATION

G3 staff personnel will coordinate, as required, with all staff and special staff personnel to maintain cognizance of the situation.

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- File update
- Attention device and threshold selection

PROCEDURES

- TOS assisted - The shift officer will initially query the data base to determine what data should be used to build displays and determine the current estimate. Files to be previewed include enemy unit status, terrain, tactical dispositions, battlefield information report, unit operations report, and staff working files.
- TOS assisted - The shift officer will select and specify the appropriate category display criteria necessary to portray the overall situation display.
- TOS assisted - The shift officer will establish SRIs to determine significant data that would reflect changing conditions in the system. Alarms and/or attention devices also need to be set to notify the operator should a significant event or value be reached.
- TOS assisted - When the administrative requirements have been established, the shift officer and operations sergeant will monitor all system displays and printer outputs to determine changing system requirements.
- Manual - Data provided by the printer would be reviewed selectively to determine what outputs need to be entered into the operations journal.
- Manual and TOS assisted - Data derived from the command FM net will be recorded by the RTO, entered into the journal by the journal clerk, distributed by the operations sergeant, and entered into TOS if applicable by the operations sergeant.

OUTPUTS

The output of this task is the generation and updating of displays and files to depict the current operations environment. Printer outputs provide a significant input for the operations journal and assist in maintaining cognizance over operations and the computer data base.

NOTES

- In addition to developing procedures to access and display data on the operations and plans TOS consoles, the plans officer, shift officer, and operations sergeant will have to develop procedures for accessing and controlling the large screen display through its consoles.
- It is assumed that G3 personnel will have the capability to access and load all message formats routinely put in at lower echelons. This would eliminate a data base loss in the event a limited communication failure were to occur. Command FM data could be taken and loaded directly into TOS by the shift officer or operations sergeant. Operations personnel will be required, using the graphics capability, to create a variety of display files which are intended to be overlaid with the regular situation display. The display file provides a rapid way to retrieve and compare data of interest to operations. It is assumed that the numbers and types of overlay displays will evolve through TOS operations and eventually be controlled by standing operating procedures.

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- A significant events file should be established and maintained by the shift officer. This record would reflect all significant tactical events having an impact on the division mission or objectives. The file of events, to be established by standard operating procedures, can be used to apprise the commander and corps of the status of the division. The file could also be used by the G3 or officer-in-charge to conduct the commander's daily briefing. This type of data is most suited to the staff working file concept if it can consist of only free text. Significant events used should be developed in free text by data time group, brief summary of the event, and accompanying actions or results. Amplifying data will probably be needed to clarify data reported in the battlefield information report. Use of the relay message by the shift officer to query the originator is a simple solution to the problem in that it can be generated easily by free text and does not affect the files.

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TOS ASSISTED TASK

ELEMENT: G3 Main

FUNCTION: Prepares operations plans and orders.

TASK: Submits required reports to corps.

FREQUENCY ESTIMATE: 12 per day

CRITICALITY: 4

DUTY POSITION: Reports Officer

INPUTS

TOS will provide a capability for center-to-center reporting which will change reporting as it is manually performed. Corps can query the TOS data base for the information it needs. The data base contains constantly updated information of interest to corps in the task organization, tactical dispositions, battlefield information report, staff working, and other files. SRIs desired by corps should be coordinated with division and established by an operations officer.

COORDINATION

- It may be necessary for operations personnel to coordinate with the S3s at brigade and battalion if clarification of some data in the file is necessary.
- Coordination with the corps G3 will be necessary to establish a corps SRI against the division data base.

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- File update

PROCEDURES

- TOS assisted - The corps shift officer will query the division data base to obtain required information and load it into the corps base.
- TOS assisted - The corps shift officer will determine and establish SRI requirements to insure that the data base is automatically updated for the starting point. SRI(s) will be coordinated with and loaded by the division shift officer to insure that updating is accomplished.

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OUTPUTS

The output of this task is an automatic screening and processing of data for corps. When data items do not exist, it is assumed they will be assembled normally and transmitted using TOS. The most notable example of this is FORSTAT.

NOTES

- Control of SRI(s) against the division data from outside sources would seem to be a prudent approach. By having division personnel load the SRI(s), better management, records, and output quality can be maintained.
- Data required by corps that cannot be extracted from TOS files might be assembled, transmitted, and stored in staff working files. The shift officer and operations sergeant should develop and maintain this type of file. Reports to be stored in staff working files should be identified and described in the division standing operating procedures.
- Corps reporting requirements, both unclassified and classified, should be assembled and matched against TOS capabilities.

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MANUAL TASK

ELEMENT: G3 Main

FUNCTION: Prepares operations plans and orders.

TASK: Plans, coordinates, supervises, and evaluates electronic countermeasures support to tactical operations and deception plans, resolves electronic countermeasures-electronic support measures conflicts (G2), and coordinates approved electronic countermeasures operations with higher, lower, and adjacent units to insure mission capabilities.

FREQUENCY ESTIMATE: As required

CRITICALITY: 2

DUTY POSITION: EW Officer

INPUTS

Reports of field conflicts by ASA personnel

OUTPUTS

Verbal guidance to brigade via C-E or EW personnel on the intended use of assets

COORDINATION

G3, G2, C-E

NOTES

- A course of action to resolve the conflict in use of assets is developed and coordinated with G3 for approval.
- This task does not qualify for TOS assistance primarily because it is one of coordination and decision making. The EW officer will require information from files such as EOB, ICM, TD, and battlefield information report. Other data that he may require should be provided by shift officers from the G2 and G3 sections.
- This discussion was of the conflict resolution of the task. Other portions of the task are discussed in following pages.

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MANUAL TASK

ELEMENT: G3 Main

FUNCTION: Prepares operations plans and orders.

TASK: Plans, coordinates, supervises, and evaluates electronic countermeasures support to tactical operations and deception plans, resolves electronic countermeasures-electronic support measures conflicts (G2), and coordinates approved electronic countermeasures operations with higher, lower, and adjacent units to insure mission capabilities.

FREQUENCY ESTIMATE: As required

CRITICALITY: 2

DUTY POSITION: EW Officer

INPUTS

If a deception plan is required to support the corps operations orders, it would be stated. To support a division operations order, tasking would be provided by the G3.

OUTPUTS

EW annex to operations order. There is an EW annex to all deception plans.

COORDINATION

Coordinates with ASA to resolve any conflicts in the utilization of division assets. EW annex would also be coordinated with the corps EW officer. If the operations order is documented, then the coordination would be in writing.

NOTES

- The EW officer will develop a course of action (EW annex) and coordinate it with the G3.
- The deception plan is intended to set priorities and plans for defensive use of assets to find and identify enemy assets like FM nets, radars, and artillery, and set priorities for offensive operations.
- This task will remain manual as is the tasking for annex development. If the EW officer needs data from TOS files to support his plan, it can be made available by shift officers from G2 and G3 sections.

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MANUAL TASK

ELEMENT: G3 Main

FUNCTION: Prepares operations plans and orders.

TASK: Plans, coordinates, supervises, and evaluates electronic countermeasures support to tactical operations and deception plans, resolves electronic countermeasures-electronic support measures conflicts (G2), and coordinates approved electronic countermeasures operations with higher, lower, and adjacent units to insure mission capabilities.

FREQUENCY ESTIMATE: As required

CRITICALITY: 2

DUTY POSITION: EW Officer

INPUTS

Corps operations order

OUTPUTS

Verbal comments to the corps EW officer concerning the EW annex to the operations order

COORDINATION

Corps EW Officer

NOTES

- The review insures that division planning of assets is not in conflict with corps. As with the previous EW task, this involves operation order development which is strictly manual.
- This annex review has no TOS application.

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TOS ASSISTED TASK

ELEMENT: G3 Main

FUNCTION: Prepares operations plans and orders.

TASK: Recommends the organization and equipping of units and estimates the number and type of units to be organized. Compiles and maintains the troop list (including review and revision) to insure that the number and type of units assigned are those which can best accomplish and support the mission.

FREQUENCY ESTIMATE: Unknown

CRITICALITY: 1 or 2

DUTY POSITION: Plans or Shift Officer

INPUTS

The task is initiated to develop a new task organization concurrent with operations order development. Revisions to the task organization are also dictated by the changing operational environment and may be issued in fragmentary order form. Inputs to the task are:

- Newly acquired assets
- Alterations of current assets
- Tactical situations

COORDINATION

G1, G4, FSE, aviation, signal on asset availability

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Graphics
- Data transfer
- File update

PROCEDURES

- TOS assisted - The plans or shift officer will establish a query of the corps data base to determine planning guidance that could affect task organization planning.

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- TOS assisted - The plans officer should determine and establish SRI(s) against the corps data base to detect any planned or pending division modifications to the existing task organization.
- Manual - Copies of the task organization should be provided to the operations sergeant for attachment to the operations journal.
- TOS assisted - The plans officer should store any significant operations order planning requirements obtained from corps in a staff working file for future reference.
- TOS assisted - The plans officer should access and assemble the necessary task organization data in the task organization planning file for task organization development.
- TOS assisted - The plans officer will create the new task organization modification required for an operations order or tactical situation to meet G3 guidance.
- TOS assisted - The new task organization data should be stored in the task organization planning file for coordination and approval.
- TOS assisted - When approved, the new task organization will be executed concurrently with a new operations order or immediately in response to a tactical requirement.
- TOS assisted - The plans officer will initiate an SRI to obtain brigade and battalion modifications to the basic division task organization.

OUTPUTS

The output of this task is the establishment of a new task organization to support division operations or to revise an existing one. An SRI should be established to obtain task organization changes implemented by corps, brigade, or battalion. This task supports operations order development, real time task organization requirements, and future planning needs.

NOTES

- SRI distribution against corps, brigade, and battalion should include both main and tactical command posts.
- A troop list will be preloaded into the division system software. Operations staff will enter non-organic corps units or units assigned or attached since the troop list was preloaded.
- Unit changes may be put in a pending status if the change is to be made more than 30 minutes later.
- This task was selected for TOS assistance because of its high criticality and its relation to operations order and fragmentary order planning. The task organization can be released concurrently with the operations overlay and the first five paragraphs of the operations order.
- Changes to the task organization can be made to be effective immediately or at some point in the future.
- Staff officers at all echelons of the division are able to input, maintain, and receive output data on a unit and its subordinate unit's task organization and task force organization.

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MANUAL TASK

ELEMENT: G3 Main

FUNCTION: Plans and coordinates tactical troop movements.

TASK: Plans and coordinates tactical troop movements.

FREQUENCY ESTIMATE: 1 time per operation

CRITICALITY: 2

DUTY POSITION: G3, G4, Division Transportation Officer, Assistant Division Engineer, Provost Marshal Officer

INPUTS

Basic operations order which identifies troop movement requirements

OUTPUTS

G3 will finalize and produce the movement order as part of the operations order. Smaller moves will be handled by fragmentary orders.

COORDINATION

- G3 - selects and designates the units for move
- G3 - establishes priorities for units to move and location for move
- Division Transportation Officer - establishes types of movement, routes, times
- Division Transportation Officer/G3 - will coordinate on bivouacking and staging areas
- Provost Marshal Officer/units - will arrange for movement security
- Other staff agencies will coordinate as required

NOTES

The G3 has overall responsibility for development and coordination of the movement order. The G4 will publish the movement order after G3 coordination. This task will remain manual because there are no support programs in TOS to aid officers in this planning function. G3 and G4 section personnel will have a need to query the tactical dispositions and terrain files for unit location, roads, obstacles, and contamination areas in order to develop movement plans. This task can be quite time consuming and may be well suited for future automation.

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TOS ASSISTED TASK

ELEMENT: G3 Main

FUNCTION: Plans air support.

TASK: Receives, evaluates, and coordinates requests for preplanned close air support missions.

FREQUENCY ESTIMATE: Once per day

CRITICALITY: 2

DUTY POSITION: G3 Air, G3 Air Operations Sergeant

INPUTS

This task is initiated upon completion and receipt of brigades' preplanned close air strike requests. Requests will be prioritized and loaded in a division staff working file. Upon completion of loading the brigade requests, each brigade will transmit a relay message to the G3 air indicating completion of their portion of the file.

COORDINATION

The G3 air will only be required to coordinate with the brigade S3 air and the corps air.

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Graphics

PROCEDURES

- TOS assisted - The G3 air will establish a staff working file to accommodate the development of close air support missions within the division. The staff working file will be organized to allow a division roll up of requests starting at the battalion level.
- TOS assisted - The battalion S3 air will develop the daily air support requests for his operations and access the staff working file and load them by priority into the file space designated.
- TOS assisted - Upon completion of loading the air strike requests, the S3 air will transmit a relay message to the brigade S3 air indicating that his portion of the file has been completed.

- TOS assisted - The brigade S3 air will access the file when the battalions have indicated completion in order to consolidate and prioritize the requests in accordance with brigade goals or objectives. Additional brigade requests may also be added to the file.
- TOS assisted - When the requests have been reordered to comply with brigade requirements, the S3 will notify division by use of the relay message.
- TOS assisted - G3 air will also reorder the file to satisfy division needs and transmit a completion notice to corps air via the relay message.
- Manual and TOS assisted - Corps air will access the division file by pre-stored query and reorder the division data by priority in the corps file for coordination with the DASC.
- TOS assisted - The DASC will access the corps preplanned air requests and coordinate their approval with corps air. The approved close air support postings will be upgraded in the corps computer by the corps air to include deletions, combined sorties, and approvals. Corps will also input mission number, number and type of aircraft provided, call sign, ordnance carried, time on target, and any other relevant data for approved close air support requests.
- TOS assisted - Corps G3 air will notify divisions of preplanned flight approval file availability by relay messages.
- TOS assisted - Division G3 air will initiate a prestored query to access and load the corps preplanned flight approval file in the division data base.
- TOS assisted - G3 air should notify brigades and battalions by relay message that preplanned close air support approvals are available for access.

OUTPUTS

The outputs of this task are the roll up of preplanned close air support requirements from battalion to division. When the division roll up is completed, corps will access the division file, review and modify it, input the modified file into the corps file, and coordinate flight approvals with the DASC. The approved flights will then be accessed in the corps file by division and made available to brigades and battalions.

NOTES

- The roll up by each echelon is assumed to be an addition, deletion, consolidation, or priority change as it relates to each individual request.
- When the division uses the prestored query to access and transfer the corps approved preplanned close air support file, the division G3 air will either purge the file before loading the updated file or update it routinely. Each echelon involved in the roll up should print its requests to the next echelon for the record and for use in reconsidering disapprovals.
- This task qualifies for TOS assistance because of its priority, repetition, and time requirements. By using TOS to roll up requests, staff officers can delay submitting targeting requests for the next day to the last minute and consequently improve target selection.

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MANUAL TASK

ELEMENT: G3 Main

FUNCTION: Plans air support.

TASK: Prepares the close air support portion of plans and orders as required.

FREQUENCY ESTIMATE: 1 per day

CRITICALITY: 2

DUTY POSITION: G3 Air, G3 Air Operations Sergeant

INPUTS

Draft operations order, operations overlay, and commander's guidance from concept of operations briefing.

OUTPUTS

Air fire support appendix to the fire support annex

COORDINATION

FSE

NOTES

- The air support appendix is provided to the FSE for inclusion in the fire support annex. It includes sortie availability, priority units, and timing.
- This task remains manual and is consistent with all annex development. There may be a requirement to access the files for planning and operations order data.

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TOS ASSISTED TASK

ELEMENT: G3 Main

FUNCTION: Performs administrative duties.

TASK: Types and distributes messages and documents.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 4

DUTY POSITION: Shift Officer, Operations Sergeant, Reports Officer

INPUTS

This task is initiated in response to a directive by the shift or plans officer to prepare and disseminate administrative messages, reports, or other data to lower or higher echelons. Inputs may include but are not limited to:

- Operations order
- Fragmentary orders
- Reports
- Significant events
- Movement orders
- Interstaff messages

COORDINATION

- Plans officer
- System controller (SYSCON)

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- File update

PROCEDURES

- Manual - The message content, distribution, and type of message format would be provided by the plans or shift officer.
- TOS assisted - The operations sergeant would call up the appropriate format, develop the message, set the distribution, and transmit the message.
- Manual - Hardcopy of the message should be put in the operations journal for reference, if applicable.

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- Manual and TOS assisted - Transmission difficulties will automatically be reported to the SYSCON. The SYSCON should notify the G3 section which addressees did not receive the message.
- Manual - The operations sergeant should task the RIO to contact the recipients experiencing difficulties on the command FM net and pass the message manually.

OUTPUTS

This task provides the administrative capability to transmit messages internally and externally to a distribution established by the user.

NOTES

- Distribution of messages will be at the discretion of the sender. The capability will exist to distribute to a specific set of addresses or to a limited number of originator codes.
- Two capabilities exist to accomplish the preparation and transmission of these reports and messages. The first is the relay message which is free text and has a variable distribution capability which appears most adequate for the task. The major limitation of the relay message is that its contents are not added to any data base. Since it is not loaded in the data base, the message cannot be accessed, added to, changed, updated, or deleted. The second capability is provided by the unit operations report file. It is largely free text and was originally intended to contain information on the tactical situation, support problems and reports, weather, terrain considerations affecting the mission, and perhaps reports of enemy activity requiring command attention. This formatted message can be addressed adequately to handle distribution and can be a permanent record in the file. However, it has a major limitation in that it cannot be changed or altered once it is entered in the file. Unit operations report records may only be added to or deleted from the file. It appears that the ultimate solution to selecting the message format for passing administrative messages centers on whether or not the user wants the message stored in the computer. Either of the message formats can be output on the line printer.
- Consideration should be given to providing a change or modification capability to the unit operations report file.
- It is envisioned that considerable message traffic will occur between divisions, brigades, and battalions to clarify or obtain additional data to support the battlefield information report. The relay message provides a practical method for questioning and providing responses for that type of information.
- All messages output from division should be hardcopied and provided for the operations journal.
- This task is considered more supportive and accomplished as an integral part of other tasks.

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MANUAL TASK

ELEMENT: G3 Main

FUNCTION: Performs administrative duties.

TASK: Coordinates administrative publication actions to insure timely production of finished operations documents.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 4

DUTY POSITION: Operations Sergeant, Radio Telephone Operator, Journal Clerk

INPUTS

Approved documents, reports, and interstaff messages

OUTPUTS

Finished documents and reports

COORDINATION

- Officer-in-charge
- Shift Officer
- Reports clerk
- Journal clerk
- Radio telephone operator (RTO)

NOTES

- Approval of finished reports and documents will be by the officers listed. The journal clerk will log the output and the RTO will handle the transmission.
- This task is essentially eliminated by the fact that preparation and distribution of messages, reports, and other documents is automated with the TOS.

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MANUAL TASK

ELEMENT: G3 Main

FUNCTION: Performs administrative duties

TASK: Maintains the classified log.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 4

DUTY POSITION: Shift Officer, Operations Sergeant

INPUTS

Receipt of classified documents

OUTPUTS

Log reflecting document receipt and distribution

COORDINATION

- Officer-in-charge
- Shift Officer

NOTES

- The officer-in-charge or shift officer will review the document to determine the responsible staff agency to receive it.
- This task is of too low a priority to be considered for TOS assistance. It is readily handled manually.

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MANUAL TASK

ELEMENT: G3 Main

FUNCTION: Performs administrative duties.

TASK: Supervises the maintenance of the division tactical standing operating procedures.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 4

DUTY POSITION: G3 Air

INPUTS

Mission requirements that could cause a change in normal operating procedures

OUTPUTS

Fragmentary order change to tactical standing operating procedures

COORDINATION

- Appropriate staff agencies
- G3 for approval of the fragmentary order

NOTES

- This task could be assigned to the G3 air as a special project by the G3.
- Although this task will remain basically manual, the G3 air or any other officer assigned this task will be required to assimilate an inordinate amount of system knowledge to adequately handle standing operating procedures development.

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MANUAL TASK

ELEMENT: G3 Main

FUNCTION: Performs administrative duties.

TASK: Coordinates activities of assigned and attached liaison personnel.

FREQUENCY ESTIMATE: As required

CRITICALITY: 2 or 3

DUTY POSITION: Officer-in-charge, Shift Officer

INPUTS

Coordination and tasking to accomplish mission requirements resulting from:

- Immediate air requests
- Combat information targets
- Operations order and fragmentary orders
- Air support
- Reports
- Briefings

OUTPUTS

Response, either verbal or in writing, to specific tasking

COORDINATION

FSE, TACP, Air Liaison Officer, Assistant Division Engineer, Army aviation, ADA

NOTES

The G3 has responsibility for overall coordination within the division tactical operations center, including special staff and liaison personnel.

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PERSONNEL.

TABLE 16.
G3 Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
G3	05	54A	1	05	54A	1
Assistant G3	04	54A	1	04	54A	2
Assistant G3 air	04	54A	1	04	54A	1
Assistant G3				03	54A	2
Operations sergeant	E8	11B50	1	E8	11B50	2
Operations sergeant	E7	11B40	1	E7	11B40	2
Assistant operations sergeant	E5	11B20	1	E5	11B20	2
Secretary-steno	E5	71C30	1	E5	71C30	1
Clerk typist	E4	71B20	1	E4	71B20	1
Light vehicle driver	E3	11B10	<u>1</u>	E3	11B10	<u>1</u>
Total Officers/Enlisted Men			3/6			6/9

This table depicts the manning a division might employ to sustain 24-hour operations in a tactically deployed manual G3 element and the G3 manning a division might employ to sustain 24-hour operations using TOS. The recommendations do not provide for relief or replacement personnel.

The G3 element in a division equipped with TOS will deploy personnel to the division main and tactical command posts in sufficient number and types to operate two shifts at each command post. This section addresses the personnel requirements for the main command post. The personnel needed at the tactical command post will be addressed in a subsequent section of this document.

Although the G3 is included on this chart, this principal staff officer's location depends on the tactical situation and the commander's desires. He is normally located at the tactical command post.

Enlisted personnel perform the tasks of administration, radio operations, journal maintenance, courier service, and double as drivers. They also do the bulk of tear down, relocation, and reassembly of the division tactical operations center when this becomes necessary.

For TOS operations there is a need to increase the officers assigned to the main command post. Each 12-hour shift needs an assistant G3 to be the shift officer responsible for the conduct of all operational tasks within the G3 element. Among these are manning the operations console; ensuring that all operational information is correctly received, recorded, filed, and displayed for the commander and staff; being aware of all critical events that are occurring within the division; ensuring that all tactically important information received is made known to the operations officer-in-charge and prepared for dissemination to higher headquarters, if applicable; and coordinating with other staff elements which impact on operations, such as FSE, NBC, and aviation.

In addition to the shift officer, there is a need for a plans officer-in-charge responsible for G3 activities including administrative planning, briefing the command staff, coordinating with higher and lower echelons, developing tactical courses of action, and providing general guidance and supervision to special liaison staff personnel. With the TOS, this plans officer will also man a console, conduct certain file management responsibilities, approve outgoing messages, determine special display requirements, and be responsible for continuity of operations.

The number of enlisted personnel assigned to the G3 element at the main command post must be increased for TOS operations. One operations sergeant cannot oversee the administrative crew activities for two 12-hour shifts. An additional operations sergeant is needed to be responsible for an operations crew and assisting the shift officer. Under TOS, he will operate the console, prepare displays and reports, send administrative messages, and coordinate TOS additions to the operations journal. With the two 12-hour shift requirements, additional personnel are needed to support and maintain the radio-telephone operations. Two command FM nets are maintained on each shift and one additional assistant operations sergeant is needed for manning the FM nets. For operations with TOS, the following additional manning for the G3 element at the main command post is recommended:

- One assistant G3 plans officer so that each 12-hour shift will have an officer-in-charge for planning and coordinating
- Two assistant G3 shift officers for managing the G3 personnel and conducting the G3 element operations

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- One operations sergeant to support the 12-hour shift concept and assist the shift officer with TOS operations
- One assistant operations sergeant to conduct radio-telephone operations.

It is important to note that the suggested increases in personnel are not required just to support TOS operations. Personnel increases seem appropriate and appear justifiable to sustain a 24-hour 2-shift operation.

RECOMMENDATION

Develop the capability to generate alternative courses of action.

The capability to generate alternative courses of action would be useful for known mission, contingency, and future planning. An algorithm should be developed for TOS that would provide an assessment of courses of action considering factors such as objectives, weather, terrain, obstacles, force disposition, and supporting attack requirements. This capability would reduce staff planning time and allow personnel to concentrate on decision making.

Provide a change message capability with the UOR file.

No capability exists in the UOR file to amend or change information previously entered in the file. Data can only be changed by deleting and re-entering the information in its entirety. Operations personnel need the capability to correct errors or change data to information entered in the UOR file. The development of a change message for use with the UOR file would meet this need.

Provide operational summaries with the UOR file.

All significant events occurring in the division should be entered in the UOR file using a simple format and summarized text. The format might be: date-time group, summary of the event, impact on the division, and actions taken. The free text capability of the UOR file makes this application feasible. The UOR file could then be processed to provide an operational events summary for review by the commander and staff.

Retain manual operations journal maintenance during TOS operations.

The manual recording of significant information being passed on the command FM net should be continued as division personnel develop skills in using TOS. The manual log should be augmented with printouts of significant events recorded within TOS to meet the journal requirements. The number and type of TOS printouts to be used as journal entries should be established by standing operating procedures. As experience is gained with TOS, the division should attempt to eliminate manual operations journal recording and rely on TOS recording of inserted or processed information.

FIRE SUPPORT ELEMENT

GENERAL

The fire support element (FSE) is supervised by the division fire support coordinator located at division artillery. The FSE has personnel located at the division main command post and the division tactical command post. The FSE provides the primary interface for both command posts with division artillery.

The FSE element represents the division artillery at the division main command post and provides information on the status of field artillery support means, recommends the field artillery task organization, recommends the field artillery ammunitions required supply rate, recommends the allocation and assignment of nuclear and chemical weapons for field artillery missions, assists in the preparation of operations plans and orders, and conducts target analysis and damage assessment of nuclear and chemical weapons employed on surface targets. These functions are performed and coordinated with the assistant chief of staff for operations, G3.

MISSION

The FSE mission in the division tactical operations center is to plan and coordinate responsive field artillery fire support of maneuvering forces.

OVERVIEW OF TOS OPERATIONS

The FSE will share a location in the operations element of the division tactical operations center with personnel from G3 air and DAME. FSE personnel will utilize the FSE/air/DAME TOS terminal to:

- Conduct queries and establish SRIs against the files to retrieve data necessary to support operational responsibilities.
- Develop displays which depict artillery operations currently being conducted within the division.
- Receive, process, and coordinate, if required, combat target intelligence input by G2.
- Develop, recommend, and insert fire support coordination measures in the files.

TOS capabilities of data base access, update, graphics, and data transfer will be utilized to accomplish these basic requirements. The FSE will also have access to a TACFIRE variable format message entry device (VFMED) which will be used to:

- Establish the TACFIRE data base

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- Establish FSE TACFIRE files
- Conduct nuclear target analysis.

Procedural information relating to the FSE TACFIRE responsibilities may be found in DEP TM 11-7440-253-10-2, FSE Operator's Manual. Subsequent task discussions may include references to TACFIRE tasks, but no attempt will be made to describe the TACFIRE tasks. TOS and TACFIRE have affected the performance of every FSE function and task.

The FSE element will utilize TOS capabilities of file access and graphics to support three manual tasks which involve operations order planning, field artillery organization for combat, and maintenance of the status and capability of fire support resources. The use of query and SRI provides FSE planners knowledge of what is in the files which may be considered when planning a fire support annex or developing task organization requirements for combat. The graphics capability of TOS can be used by FSE personnel to develop an overlay for the fire support annex to portray the target list under consideration. It can also be used for developing an overall situation display summary to describe current artillery operations within the division.

The display summary will allow FSE personnel to monitor operations and to be in a position to brief senior officers should the need arise. The FSE personnel will need to become proficient in the operation of the large screen display console should the need arise to display the artillery situation on the large screen display. Although the three tasks referenced were not selected as TOS assisted tasks, TOS support is most certainly warranted because the tasks are all critical to the attainment of mission objectives and frequently performed.

TOS will automatically provide FSE personnel with all target intelligence data developed by the G2 A&P section and enter these data in the artillery target intelligence (ATI) file of TACFIRE. Targets not qualifying for DIVARTY engagement will be passed back to the FSE for additional coordination with the G3 air for tactical air support or corps for processing. Battle damage assessment results by TACFIRE or TACP will be provided to the FSE for addition to the appropriate ESD file record. File association will be made through the target assignment number made by TOS. Target intelligence file data will only be purged by personnel from the G2 A&P section. This task was selected for TOS assistance because of its criticality.

The FSE personnel will be responsible for developing and loading fire support coordination measures such as the fire coordination line in the data base. The fire coordination line will be regenerated using the TOS query, SRI, and graphics capabilities when the FSE detects a significant shift in the friendly front line trace. The new coordination line would be inserted in the tactical dispositions file and transmitted to all addresses required by standing operating procedures. The output of the fire coordination line to corps, for example,

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is required. It would also be incumbent upon FSE personnel to update their situation summary display to reflect this change using the TOS graphics capability. This task was selected for TOS assistance because it is critical to achieving mission objectives, it is performed frequently and its data is required in the TD file. As the primary user of the FSE/air/DAME console, FSE personnel should be responsible for the moving and reinstalling of the TOS equipment and initializing and checking out the console and its communications when the division tactical operations center relocates.

FUNCTIONS AND TASKS

Functions and tasks performed by the FSE element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 17.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 17.
Fire Support Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	FA Intelligence Officer	Target Analyst	Opera Serge
Plans fire support.			
Prepares the fire support portion of the operations order.	X	X	X
Recommends field artillery organization for combat.	X		
Maintains the current status and capabilities of all fire support resources available to the division for attack of surface targets.			(X)
Receives and processes combat information from the G2.	(X)		(X)
Recommends fire support coordination measures.	(X)		(X)
Conducts nuclear target analysis and recommends target for attack with nuclear weapons.			
Evaluates all available intelligence to identify potential targets for nuclear attack and conducts nuclear target analysis.			[X]
Prepares and schedules nuclear fire plans in support of the division scheme of maneuvers.			[X]
Performs the hookup, energizing, initialization, and checkout of the TOS console.			(X)
<hr/> X - Manual Task (X) - TOS Assisted Task [X] - TACFIRE Assisted Task			

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skt Tasks

erap rge	Operations Sergeant	Radio Telephone Team Chief	Radio Telephone Operator	Clerk Typist
X	X	X	X	X
(X)	(X)	X	X	X
(X)	(X)			
(X)	(X)			
X	X			X
(X)	(X)			

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MANUAL TASK

ELEMENT: FSE Main

FUNCTION: Plans fire support.

TASK: Prepares the fire support portion of the operations order.

FREQUENCY ESTIMATE: 1 time per day

CRITICALITY: 1

DUTY POSITION: FA Intelligence Officer, Target Analyst, Operations Sergeant,
Radio Teletype Operator, Clerk Typist

INPUTS

G3 plans and objectives and the operations overlay. Additional guidance may be provided at the concept of operations briefing.

OUTPUTS

Fire support annex which designates the organization for combat. May include but is not limited to:

- Operations overlay which includes the target list
- Amount of ammunition to be expended
- Type of support to be provided (i.e., direct support, reinforcing, general support reinforcing)
- Travel time required to make a move

COORDINATION

- Coordinate with G3 air to integrate the air support appendix into fire support annex. It will include the number of sorties available, priorities, and units.
- Annex will be coordinated with DIVARTY by teletype.
- Finalized annex will go to the G3.

NOTES

- The G3 normally will provide the basic input or cue for planning.
- Basic annex development remains a manual function, but FSE personnel using TOS will be able to access graphics to design and develop overlays, assemble data required in staff working files, and query the files for status.

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MANUAL TASK

ELEMENT: FSE Main

FUNCTION: Plans fire support.

TASK: Recommends field artillery organization for combat.

FREQUENCY ESTIMATE: 1 time per day

CRITICALITY: 1

DUTY POSITION: FA Intelligence Officer, Clerk Typist

INPUTS

- Initiated by request for additional support by a brigade, battalion, or company
- Shift of enemy forces or combat power

OUTPUTS

Shift of forces and assets to accomplish the new mission assigned to DIVARTY

COORDINATION

- DIVARTY S3
- G3 Main

NOTES

- Shifting of forces questioned by the G3 will be resolved locally by the staff and in consultation with DIVARTY.
- This task will require TOS support but it is envisioned that task organization changes required to support DIVARTY would be developed and coordinated by the FSE with the G3. The G3 element will be responsible for entering the required data into TOS. FSE could simplify the G3 task by providing the recommended change in the appropriate TOS format.
- The FSE should have the capability to query and SRI the TD file in order to retrieve data.

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MANUAL TASK

ELEMENT: FSE Main

FUNCTION: Maintains the current status and capabilities of all fire support resources available to the division for attack of surface targets.

TASK: Maintains the current status and capabilities of all fire support resources available to the division for attack of surface targets.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 1

DUTY POSITION: Operations Sergeant, Radio Telephone Operator, Clerk Typist

INPUTS

- Situation report data from firing batteries to the DIVARTY S3. DIVARTY provides status reports to the FSE twice a day.
- Information minimally includes: fire unit locations, weapons types, tube status, ammunition loads and allocations, and range and coverage capabilities.
- TOS impact - When TOS and TACFIRE are totally interfaced, this task will probably be automated and data will be provided digitally to the TD file.

OUTPUTS

- Artillery situation report to corps twice a day by teletype
 - Headquarters location to the G3
 - All locations posted on the artillery operations map
 - All required data posted on the artillery situation report chart
 - TOS impact on outputs:
 - Artillery situation data will no longer be passed manually to corps as these data can be obtained by a corps query or SRI.
 - Headquarters data will be output automatically.
 - All manual posting of data will cease. The FSE should develop TOS displays to depict the current artillery situation to include:
 - Fire coordination line
 - Friendly front line trace
 - Brigade control line
 - Brigade boundaries
 - Fire unit locations
 - Aim points for target planning
 - Intelligence collection team locations
 - Other exclusion areas
- The situation report chart could be retained and kept in a staff working file.

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COORDINATION

- DIVARTY
- G3
- Corps
- Air liaison officer

NOTES

- Data are obtained by monitoring the FM net from lower echelons to DIVARTY rather than waiting for the required reports which go from DIVARTY to the FSE twice a day.
- The RTO records and passes data to the shift operations sergeant.
- The shift operations sergeant assigns the plotting of data, notifies the G3 operations sergeant of required headquarters locations data, or plots it himself; also will be provided in writing. Pass status to corps twice a day by line item number.
- The basic manual processing described above is likely to disappear when the TOS-TACFIRE integration is completed.
- The FSE must be able to query or SRI the FRENSIT files to be able to keep abreast of data changes, access the TOS graphics and large screen display capabilities to build displays and files, and conduct briefings.

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TOS ASSISTED TASK

ELEMENT: FSE Main

FUNCTION: Receives and processes combat information from the G2.

TASK: Receives and processes combat information from the G2.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 1

DUTY POSITION: Shift Officer, Operations Sergeant

INPUTS

All processed intelligence sightings or inputs from the all source intelligence center are input by means of the ESD function of TOS. These data are automatically processed and passed as targets to the TACFIRE artillery target intelligence file. TOS will also automatically assign a TACFIRE target number to the specified target to permit coordination and correlation.

COORDINATION

- G3 air
- G2
- G3
- DIVARTY
- Corps artillery

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Data transfer

PROCEDURES

- TOS assisted - The FSE shift officer will be responsible for receiving and loading TACFIRE target assignment numbers into TOS.
- TOS assisted - The shift officer will review each new target passed automatically to the ATI file by TOS. These data may appear on console and should be printed for the record.
- TOS assisted - Targets not falling in the DIVARTY area of responsibility or meeting the range capability of artillery assets assigned should be coordinated with the FSE shift officer by the DIVARTY shift officer. This coordination could be accomplished using the TOS relay message if TACFIRE

can use it, an equivalent TACFIRE message, or manually.

- Manual - If appropriate, the shift officer should coordinate the target with the G3 air for assignment through tactical air.
- TOS Assisted - If tactical air cannot be assigned, the shift officer will call up the appropriate ESD format and make an indication of no assignment to stimulate corp processing. Correlation with the ESD file will be accomplished by target assignment number. A corps SRI would need to be established against the data base to detect such targets. The FSE should be responsible for establishing the corps SRI.
- Manual or TOS assisted - TACFIRE target engagement results are anticipated to be provided manually for updating in the ESD file. File correlation can be by target assignment number. Tactical air engagement results will be provided to the FSE shift officer manually and the ESD file will be recalled and annotated accordingly.
- TOS assisted - Target purging will be accomplished by the G2 A&P section using the ESD delete function.

OUTPUTS

The outputs of this task are the assignment, engagement, and destruction of G2 target intelligence data. Targets beyond TACFIRE capabilities will be assigned to tactical air or corps for resolution and assignment. Target engagement results will be processed through the system in order to update and purge target file data.

NOTES

- Program support to assign TACFIRE target numbers to TOS targets will be required to make target coordination and correlation possible. This support does not appear to currently exist and should be considered for future development. The FSE is the logical choice to receive and load these data into the files.
- The target coordination function could be improved if a target screening function were available in TOS to examine the target for range capability and boundary authorization. This could prevent TACFIRE from processing out of range and unauthorized targets.
- Standing operating procedures should be developed for handling targets which remain in the system and have a short life expectancy. The FSE should provide the screening function if it is not resident in TACFIRE.

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TOS ASSISTED TASK

ELEMENT: FSE Main

FUNCTION: Recommends fire support coordination measures.

TASK: Recommends fire support coordination measures.

FREQUENCY ESTIMATE: 2 times per day

CRITICALITY: 2

DUTY POSITION: Shift Officer, Operations Sergeant

INPUTS

A shift in the front line traces may cause a shift in the fire coordination line.

COORDINATION

- New fire coordination line is coordinated and approved by the G3
- G3 air (if not available, go direct to TACP)

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Graphics
- Data transfer

PROCEDURES

- TOS assisted - The FSE shift officer will set an SRI against the tactical dispositions file to detect changes in front line traces.
- Manual - Changes to front line traces will be evaluated manually to determine if a significant change has occurred. If it has, a new fire coordination line must be generated.
- TOS assisted - The shift officer will access the TD file and insert the new fire coordination line. The distribution stated by standing operating procedures will also be inserted and coordination with the G3 may be handled manually either before or after the new coordinates are entered into the file.
- TOS assisted - The shift officer or operations sergeant should access the display file and adjust the fire coordination line.
- TOS assisted - The shift officer or the operations sergeant will monitor the console and evaluate any additional changes to the front line traces.

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OUTPUTS

The output of this task is the updating of fire control measures or areas that define the area of fire for DIVARTY.

NOTES

- Other factors impacting on the definition of the area of fire for DIVARTY are:
 - No fire lines
 - Air corridor indicators
 - Exclusion areas
 - Dead space areas
 - Chemical hazard areas
 - Minefields
 - Zones of responsibility
- It was assumed that originators of these areas will insert the FSE and DIVARTY as addresses. Standing operating procedures covering the distribution of this type of data are required.
- Output of the fire control line to corps is required.

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MANUAL TASK

ELEMENT: FSE Main

FUNCTION: Conducts nuclear target analysis and recommends targets for attack with nuclear weapons.

TASK: Evaluates all available intelligence to identify potential targets for nuclear attack and conducts nuclear target analysis.

FREQUENCY ESTIMATE: 2 per day or as the friendly front line trace (FFLT) changes

CRITICALITY: 1 or 2

DUTY POSITION: Target Analyst

INPUTS

Basic target data for analysis is provided by the G2 A&P section

OUTPUTS

Passed to DIVARTY as a mission to be generated when directed. Outputs include:

- Yields and allocations
- Troop safety and damage limiting factors
- Target scheduling and phasing factors

(All other planning will be done by DIVARTY)

COORDINATION

- G2
- G3
- DIVARTY
- Corps
- Chief of staff and commanding general
- Chemical, biological, and radiological element

NOTES

- Criticality of nuclear planning deals with stages of release. If weapons are available, the criticality becomes 1 and updating becomes continuous.
- Only basic nuclear targeting is done by the FSE. All conventional targeting is done by DIVARTY.
- Target availability is extracted from G2 data, FSE situation display, and other target source data.

- Target selection is based on location, terrain, type of target, personnel effect, fallout, weather, mission, fire power capabilities, and priorities.
- The finalized target list is coordinated with G3 and briefed to the chief of staff and commanding general for approval. The modified and approved list is sent to corps for integration with their fire plan and provided to DIVARTY as a mission.
- The FSE situation display contains unit locations, unit coordinates, no fire lines, front line traces, brigade controlled fire line, fire support control line, intelligence collection teams, and exclusion areas.
- Target analysis is reinitiated every time there is a significant shift in the friendly front line trace.
- Initial nuclear planning involves only developing aiming points. Once the mission has been given, the target analyst recalculates aiming points into actual targets.
- TOS/TACFIRE impact - This task does not qualify for TOS support but will be accomplished by the FSE using the TACFIRE VFMED provided in the division tactical operations center. TACFIRE nuclear target analysis is accomplished in three phases: preanalysis, analysis, and post analysis. The preanalysis establishes criteria to be used during the analysis phase. The analysis determines various ways to attack and defeat the target with nuclear munitions. The post analysis examines the effects of fallout and vulnerability of friendly units in the area of the target. TACFIRE FSE procedures to accomplish this analysis may be found in DEP TM 11-7440-253-10-2, FSE Operator's Manual.
- After the nuclear analysis data are provided to the FSE via the VFMED, the manual procedures currently outlined to coordinate the data with the G3, commanding general, and corps still apply.

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MANUAL TASK

ELEMENT: FSE Main

FUNCTION: Conducts nuclear target analysis and recommends targets for attack with nuclear weapons.

TASK: Prepares and schedules nuclear fire plans in support of the division scheme of maneuvers.

FREQUENCY ESTIMATE: Once every three or four days

CRITICALITY: 2

DUTY POSITION: Target Analyst, Operations Sergeant, Clerk Typist

INPUTS

Basic operations order and intelligence annex

OUTPUTS

Appendix to the fire support plan

COORDINATION

- FSE personnel
- DIVARTY
- Chemical officer
- G3
- G2

NOTES

- Development of the fire support plan or annex includes employment concepts, allocation of weapons, coordinating instructions, targeting instructions, and constraints.
- Fire support planning for operations order annex development will remain manual. Data provided during the conduct of nuclear target analysis can assist the target analyst in developing fire support plans for the operations order.

PERSONNEL

TABLE 18.
FSE Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
Field artillery intelligence officer	04	13A	1	04	13A	1
Target analyst	03	13A	2	03	13A	2
Operations sergeant	E8	13Z50	1	E8	13Z50	1
Chief fire direction computer	E7	13E40	1	E7	13E40	1
Radio telephone team chief	E5	05C40	1	E5	05C40	1
Radio telephone operator	E4	05F20	2	E4	05F20	1
Clerk typist	E4	71B30	<u>1</u>	E4	71B30	<u>1</u>
Total Officers/Enlisted Men			3/6			3/5

This table depicts the manning a division might employ to sustain 24-hour operations in a tactically deployed manual element and the manning proposed for the element to sustain 24-hour operations using TOS. The recommendations do not provide for relief or replacement personnel.

The FSE in a division equipped with TOS will deploy personnel to the division main and tactical command posts. Manning requirements exist for two shifts at each command post. This section addresses only the requirements for the main command post and more specifically only those required in the division tactical operations center. Tactical command post requirements will be addressed in a subsequent section of this document.

There appears to be no need to change the officers assigned to the FSE at the main command post. The target analyst should be capable of performing the responsibilities of shift officer in addition to performing responsibilities associated with nuclear target analysis. This is particularly true with the advent of TACFIRE nuclear target analysis. The target analyst must become proficient in the use of the TACFIRE capability to satisfy division functions.

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He will be required to interpret the TACFIRE nuclear analysis and guide the division G3 on its use. The field artillery intelligence officer will function as the officer-in-charge and support the operations. Primary support will be provided in the areas of operations order development and coordination with other staff officers. Both officers should be expected to operate consoles.

The operations sergeant will be expected to process and monitor all status displays, process target intelligence and fire coordination measures required to support TOS, and provide a backup to the shift officer as required. The operations sergeant will also be expected to perform all basic console operations for the element. The addition of another operations sergeant would be appropriate to complete the two shift requirement.

The chief fire direction computer position might be eliminated because his primary tasks will become heavily supported by TOS or TACFIRE. Basic responsibilities of G2 target analysis, weapons plotting, and status processing will become semi-automated in the TOS and TACFIRE systems. The remaining portions of these functions might be assumed by the shift officer or operations sergeant. It is suggested, that the position not be eliminated and that the chief fire direction computer be permitted to function as another operations sergeant to satisfy the two shift requirement.

The remaining radio operator and clerical enlisted personnel will be needed to support the communications and administrative responsibilities of the FSE.

RECOMMENDATIONS

Develop a target assignment number for TOS and TACFIRE correlation.

G2 target intelligence data loaded in the ESD file is automatically transmitted and stored in the ATI file of TACFIRE. A requirement exists to be able to correlate the target as recorded in the two files. Correlation of the TOS and TACFIRE files permits subsequent updating of the ESD file with battle damage results and purging of neutralized targets as required. The correlation might be accomplished by loading a block of TACFIRE target assignment numbers in TOS and having them serially assigned automatically as the G2 inserts and designates ESD messages as targets. Once assigned, the target message transmitted to TACFIRE should carry the assigned number and be inserted into the appropriate ATI file location. The FSE is the logical element to receive the TACFIRE target assignment numbers from DIVARTY and load them into the TOS data base.

Insert battle damage information on G2 established targets.

Battle damage results received by the FSE from TACFIRE or TACP need to be added to the ESD target file. This allows G2 personnel the capability of evaluating the level of damage to the target and purging it, if applicable. It is suggested

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The G2 ESD target record be recalled by the FSE and amended to show a target change. The add message should indicate that a significant event has taken place and the target damage assessment should be inserted in the free text area of the remarks section.

Develop a DIVARTY target screen for G2 target intelligence processing.

Current range and location analysis of G2 target intelligence data is expected to be accomplished by TACFIRE. Targets not meeting range and area responsibility criteria will be returned to the FSE for further processing. It is recommended that a target screen based upon artillery assets and DIVARTY areas of responsibility be developed and located in TOS to filter and pass to TACFIRE only those targets within DIVARTY's engagement capability. Those ESD target input messages not meeting the screen for DIVARTY should be transmitted to the FSE for processing with TACP or corps. This screening would eliminate the passing of inappropriate targets to TACFIRE, improve targeting, and save time.

Develop a range fan for determining friendly vulnerability to enemy fires.

Enemy artillery locations are an integral part of the G2 EOB file and might be used to assess the vulnerability of friendly artillery to enemy fires. The FSE shift officer could graphically assemble an enemy range fan from the artillery location and type data resident in the EOB file. The display fan could then be superimposed over the artillery situation display to determine which friendly units are vulnerable to or free from engagement by known enemy artillery batteries. Analysis results should be shared with the DIVARTY S3 either verbally or by relay message. A similar analysis could be accomplished by describing the artillery fan as a named area of interest and comparing it with the friendly unit locations identified in the tactical dispositions file. The advantage of using the named area of interest approach is that the analysis could consider all friendly units and not just artillery units. Data from this type of analysis would appear to be of interest to DIVARTY, to the G3 for planning purposes, to the G1 for projected personnel losses, and to the G4 for positioning supply points and selecting the main supply route.

NUCLEAR, BIOLOGICAL, CHEMICAL ELEMENT

GENERAL

The nuclear, biological, chemical element (NBC), supervised by the division chemical officer, has personnel located in the division main command post and in the tactical command post, if required. The location of the division chemical officer depends on the tactical situation and desires of the commander.

The chemical, biological, and radiological element (CBRE) will normally operate as a supporting agency of the division tactical operations center. CBRE activities encompass the friendly employment of chemical agents, fallout from friendly nuclear bursts, and techniques of defense against enemy employment of chemical/biological agents and nuclear weapons.

MISSION

The CBRE assists the commander in the coordination, control, and supervision of NBC operations within the division. The element assists in operational planning and other tasks as directed by the division chemical officer.

OVERVIEW OF TOS OPERATIONS

The CBRE will have to share a TOS console in the operations element area with the FSE, G3 air, and the DAME. Assignment to this console is unfortunate but the CBRE needs to coordinate with the FSE and have access to the TACFIRE terminal. The CBRE can use the TOS console to:

- Monitor the G2 A&P target intelligence data transmitted to TACFIRE and conduct chemical target analysis
- Disseminate strike warning messages
- Store and display friendly unit vulnerability data for a postulated enemy strike
- Process, store, and disseminate analyzed data from enemy nuclear/chemical strikes
- Store and disseminate actual fallout data to lower echelons
- Establish and maintain a division radiation exposure file.

TOS capabilities of file access, file update, graphics, and data transfer will be utilized to accomplish these and other manual tasks conducted by the CBRE. NBC personnel will require access to the TACFIRE variable format message entry device (VFMED) to:

- Specify targeting for chemical analysis if required

- Specify NBC-1 data for fallout generation.

Procedural information relating to NBC TACFIRE responsibilities may be found in DEP TM 11-7440-253-10-2, FSE Operations Manual. Subsequent task discussions may include references to TACFIRE tasks, however, no attempt will be made to describe the TACFIRE tasks to any specific level of detail.

TOS will automatically provide FSE personnel with all target intelligence data developed by the G2 A&P section and enter these data in the TACFIRE artillery intelligence file. The CBRE shift officer should screen each TOS ESD message for subject, activity, and description to determine target chemical qualification and priority. Targets considered for chemical fire planning could then be stored by the operations sergeant in a staff working file by target type and priority. When triggered by standing operating procedures or tactical event, a target plan could be developed by the shift officer using the staff working file target base and forwarded to TACFIRE for analysis. Additional planning guidance may be developed and forwarded to TACFIRE to assist in conducting the chemical analysis. Analysis results provided by TACFIRE can then be used by the division chemical officer and shift officer to brief the G3 on the overall impact of target selection, weapons applications, and hazards based on the plan. Friendly unit vulnerability data should also be stored in the staff working file with the targets for future reference. Although this task has not been specifically identified as TOS assisted, the support provided by TOS and TACFIRE are certainly relevant, time saving, and appropriate, considering the frequency and criticality.

Nuclear and chemical warning messages can be generated for fire missions assigned to TACFIRE. It will be necessary to extract and reformat the TACFIRE data provided by VFMED into a division format more usable and familiar to field units. Format preparation will be performed by the operations sergeant and chemical specialist. The option exists to generate the messages free text using the relay message capability of TOS and transmitting to all subscribers simultaneously using flash precedence, or passing the strike warning messages on the command FM net. As a general rule, the TOS communication capability should be used where possible leaving the command FM net open for the processing of immediate tactical problems of maneuvering brigades and battalions. The number of nuclear/chemical strikes processed during hostilities and the task criticality of one would appear to justify the use of TOS for this task.

Vulnerability analyses will be conducted to determine the effect of postulated enemy capabilities against maneuvering units. These analyses should be initiated and upgraded as friendly troop movement occurs. The shift officer and operations sergeant should build a targeting plan based upon enemy target philosophy and capability provided by the G2. The targeting plan would be passed to TACFIRE by the VFMED for analysis. A summarization of the analyzed data would be stored in a staff working file by plan number or mission

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for subsequent recall and briefing of the G3. Additionally, the shift officer or the operations sergeant could build a display file using TOS to portray the weapons impact on maneuvering forces. The shift officer with support from the division chemical officer, should determine whether or not the data derived warrant briefing of the G3. The targeting concept and analysis is a likely candidate for the commander's briefing conducted twice daily. The analyzed data in the staff working file and the display file could be used to satisfy this requirement and be presented by the division chemical officer. This task has also not been specifically identified as TOS assisted but the combination of TOS and TACFIRE support should significantly eliminate target analysis efforts by NBC personnel and permit more time analyzing the effects on friendly units and mission impact. The TOS and TACFIRE supporting role is justified by the criticality of the tasks and because the task is conducted a minimum of two times a day.

NBC personnel conduct post strike analysis of enemy strikes and fallout prediction for friendly forces. NBC-1 data is provided by lower echelons which initiate the task. These data can be retransmitted to TACFIRE by the operations sergeant to task the generation of NBC-3 predicted fallout data and strike warning outputs, if applicable. The first NBC-1 must also be passed to corps by the most available means. The TOS relay message is a likely candidate. All NBC-1 data must be screened by the operations sergeant and the chemical staff specialist to eliminate duplicate reports. This screening process is conducted primarily by location and time. Outputs of this correlation are NBC-2s, confirmed burst locations which need to be loaded in an NBC fallout staff working file and transmitted to all lower echelons for planning purposes. Insertion into a TOS file provides permanent file record of the analysis and makes use of the TOS communications capability. TACFIRE generated fallout and strike warning data based on NBC-1s will be provided to the NBC section through the VFMED terminal. The predicted fallout data will have to be reformatted by the operations sergeant and chemical specialist into the NBC-3 predicted fallout data format for transmission to lower echelons. NBC-3 formats as well as the reformatted strike warning messages need to be inserted in the NBC fallout staff working file for recording and transmission to lower echelons. Strike warning message distribution must also include corps. This task has also not been specifically identified as TOS assisted, however, the description provides ample use for TOS and TACFIRE in the task. TOS and TACFIRE uses are based upon task criticality of one and the frequency estimate which is ten times per day under hostile attack. The processing and dissemination of actual fallout conditions is a task selected for TOS assistance. Selection is based upon its criticality of one and because it is readily performed during peak periods of hostility. This task is without support from TACFIRE. NBC-4 radiation dose rate measurements will be submitted by lower echelons when the dose rate rises above one rad per hour. Submission by relay message would be the simplest way to code and send the data to the NBC element. The chemical staff specialists will use the NBC-4 data to construct the basic four radiation contour lines required.

The operations sergeant can assist by converting the unit readings to outside dose rates. This phase of the task must be performed manually because no support programs exist to aid the NBC personnel. Completed radiation contour data can be used by the operations sergeant to create a display file depicting current ground effects of the radiation. Concurrently, the chemical staff specialist will be analyzing and developing NBC-5 data for the NBC fallout staff working file and subsequent transmission to all lower echelons. The shift officer will conduct an analysis of the radiation effects on the maneuvering units. Using the ground effects display and the analysis, the shift officer can brief the G3 on how long troops can conduct operations in a given area and prescribe what precautionary measures need to be instituted. Access to the large screen display may be required to conduct this briefing. Subsequent courses of action would be the responsibility of the G3, however, the division chemical officer and shift officer could be tasked to provide planning support.

NBC personnel are required to maintain a radiation exposure file for the division. Battalions and separate units need to maintain a radiation exposure file of subordinate units down to the platoon level determine the battalions' radiation status category, battalions' average dose, and report through subordinate level CBRE to division. Reporting will be daily and continued for perhaps a week after the first nuclear strike. Because of the frequency and its criticality of one, this task qualified for TOS support. The CBRE shift officer will be responsible for establishing a staff working file of sufficient size to support the division NBC radiation exposure file. Brigade and battalion CBRE sections will access the file and insert their accumulative dose rates and radiation status categories according to standing operating procedures. The operations sergeant will have to query the file periodically to access and review reports of lower echelons. Out of necessity, file review will become more frequent after the receipt and confirmation of the first NBC-1 report. When the accumulative dose rates reach a moderate risk level as specified in the standing operating procedures, the division chemical officer and surgeon need to access the file and use the data to prepare a briefing for the commander on the radiation exposure status of division units. The commander can use that briefing to establish radiation exposure guides, degrees of risk, and composition of task forces for missions requiring radiation exposure.

The NBC personnel are not expected to be involved in the physical moving and reinstalling of TOS equipment but could logically be expected to conduct console system checkouts should the need arise. They will also be expected to conduct queries and establish SRIs against files to retrieve data necessary to support NBC operations and use the graphics capability of TOS to generate display files necessary for operations order development and to display tactical situations of interest to the division.

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FUNCTIONS AND TASKS

Functions and tasks performed by the NBC element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 19.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 19
Nuclear, Chemical, and Biological Element Positions, Functions, and

FUNCTIONS AND TASKS	Division	CBRE	C
	Chemical Officer	Shift Officer	
Conducts nuclear and chemical target analysis.			
Evaluates all available intelligence to identify potential targets and conducts nuclear and chemical target analysis.	X	<input checked="" type="checkbox"/>	
Conducts prestrike and vulnerability analysis to evaluate fallout danger to critical installations and friendly troop units from proposed nuclear strike or resulting chemical hazard.		<input type="checkbox"/>	
Disseminates strike warning to all units potentially affected by nuclear and chemical strikes.		X	
Prepares and schedules nuclear and chemical fire plans in support of the division scheme of maneuver; plan includes nuclear and chemical target list based upon target intelligence received from the G2 element and DIVARTY.	X	<input type="checkbox"/>	
Performs vulnerability analysis and post strike analysis of enemy nuclear and chemical strikes.			
Continuously evaluates vulnerability of critical installations and friendly units to a postulated nuclear strike and determines potential damage inflicted.		<input type="checkbox"/>	
Conducts post strike analysis of enemy nuclear and chemical strikes and determines nuclear fallout damage to selected units and critical installations.		X	
Determines actual fallout conditions.		X	
Maintains a radiation exposure file for all levels.	X	<input checked="" type="checkbox"/>	

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and Tasks

Operations Sergeant	Computer/ Plotter	Chemical Staff Specialist
X	X	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
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<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

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TABLE 19. (Continued)
Nuclear, Chemical, and Biological Element Positions, Functions,

FUNCTIONS AND TASKS	Division Chemical Officer	CBRE Shift Officer
Performs the hookup, energizing; initialization, and checkout of the TOS console.		
X - Manual Task		
<input checked="" type="checkbox"/> - TOS Assisted Task		
<input checked="" type="checkbox"/> - TACFIRE Assisted Task		

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ns, and Tasks

Operations Sergeant	Computer/ Plotter	Chemical Staff Specialist
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(X)

(X)

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MANUAL TASK

ELEMENT: NBC Main

FUNCTION: Conducts nuclear and chemical target analysis.

TASK: Evaluates all intelligence to identify potential targets and conduct nuclear/chemical target analysis.

FREQUENCY ESTIMATE: 1 or 2 times a day or when major changes occur in friendly front line trace

CRITICALITY: 1

DUTY POSITION: Division Chemical Officer, CBRE Shift Officer

INPUTS

G2 situation map contains all suspected unit locations (targets). See notes for G3 inputs.

TOS/TACFIRE inputs - Inputs for chemical target analysis will be G2 A&P intelligence target inputs entered in the TACFIRE ATI file or those provided by the shift officer using the TACFIRE VFMED.

OUTPUTS

Draft plan to achieve the objectives and targets specified by the G3. Data provided as part of the analysis include

- Coordinates and altitude of target
- Target description and area
- Date-time group of mission
- Agent
- Percent of casualties
- Delivery means/number of rounds/type of attack
- Surface wind direction
- Downwind hazard distance
- TOS/TACFIRE impact - The chemical target analysis (CTA) will be performed by algorithms resident in TACFIRE. CTA provided the NBC element with an analysis of the available means to deliver a chemical agent to a personnel target type. In addition, the analysis determines the quantity of agent (non-persistent nerve agent or persistent nerve agent) necessary to produce the percentage of casualties required and the possible hazards to friendly troops in the area.

COORDINATION

- G2
- G3
- SWO
- TOS/TACFIRE impact - The division chemical officer will brief the G3 on the results of the CTA.
- TACFIRE shift officer

NOTES

- G2 will provide reliability factors to each target.
- G3 will provide guidelines for the analysis to be provided. Guidance will cover the targets to be considered, how the targets are to be attacked, changing direction of movement or the number of units to be affected.
- Weather is closely scrutinized in the analysis of fire planning.
- Chemical worksheets for coordinating the analysis are kept by NBC personnel.
- Initial target planning would appear to be to develop aiming points for both nuclear/chemical. Target finalization and final plan is again coordinated with the G2 and calculations are made to support the final targeting plan.
- Targeting priorities:
 - (1) Troop concentrations, assembly areas
 - (2) Nuclear/chemical capable delivery units
 - (3) Command and control elements of battalion or larger size
 - (4) Airfields
 - (5) Avenues of approach
- TOS/TACFIRE impact - Control measures governing the analysis will be inserted by the shift officer on VFMED.

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MANUAL TASK

ELEMENT: NBC Main

FUNCTION: Conducts chemical target analysis.

TASK: Conducts prestrike and vulnerability analysis to evaluate fallout danger to critical installations and friendly troop units from proposed nuclear strike or resulting chemical hazard.

FREQUENCY ESTIMATE: 1 or 2 times a day

CRITICALITY: 1

DUTY POSITION: Shift Officer, Operations Sergeant, Computer/Plotter

INPUTS

- Basic chemical target list and nuclear strike data provided by FSE
- TOS/TACFIRE impact - Nuclear or chemical analysis will be performed on the G2 target input intelligence or selective target lists provided by NBC/FSE.

OUTPUTS

- Data provided to G3 support selections/weapons and possible impact or hazards based upon the plan
- Fallout data for FSE
- Output for strike warning messages
- Overlays to support fire plan
- TOS/TACFIRE impact - Data required for output of this task can be provided by the TACFIRE nuclear and chemical target analysis routines. Data output will be analyzed and summarized by the shift officer and computer/plotter for friendly effects and provided to G3 for planning purposes.

COORDINATION

- FSE
- TACFIRE
- G3

NOTES

- The shift officer does basic planning while the computer/plotter is performing the required analysis. Time usually becomes a big factor in the amount of analysis that can be done.
- Basic support provided to FSE is radiological fallout data.

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- TOS/TACFIRE impact - The shift officer will still perform some task planning and transmit it by VFMED to TACFIRE. Analysis and output generation will be accomplished by TACFIRE.

MANUAL TASK

ELEMENT: NBC Main

FUNCTION: Conducts chemical analysis.

TASK: Disseminates strike warnings to all units potentially affected by nuclear and chemical strikes.

FREQUENCY ESTIMATE: 1 for each nuclear/chemical strike

CRITICALITY: 1 to 2

DUTY POSITION: Shift Officer, Operations Sergeant, Computer/Plotter, Chemical Staff Specialist

INPUTS

- Hazard outputs from prestrike and vulnerability analysis
- TOS/TACFIRE impact - Nuclear and chemical warning messages can be generated for fire missions assigned to TACFIRE.

OUTPUTS

Formatted message on NBC hazards related to fire missions need to be transmitted to all addresses by the most expedient method.

COORDINATION

- Messages are transmitted flash priority through G2 element, or as a backup, G3 will transmit on command FM secure.
- TOS impact - The option also exists to generate the message free text using the relay message capability of TOS and transmit to all division subscribers simultaneously using flash priority.

NOTES

- Strike warning messages are made up by the CBRE or FSE.
- Once the fire mission is approved, the messages will go at the appropriate time.
- Warning messages transmitted after H + 30 become unclassified.
- Preparation of messages is accomplished by computer/plotter and operations sergeant but approval is given by the shift officer.
- Strike warning messages will contain lines: ALPHA, DELTA, FOXTROT, HOTEL, INDIA, YANKEE, ZULU.
- TOS/TACFIRE impact - it will be necessary to extract and reformat the TACFIRE output to a division format more useable by field units. Format preparation will be performed by the operations sergeant, computer/plotter,

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and the chemical staff specialist if required. Shift officer will approve and coordinate the summary with the G3. The chemical specialist will access TOS, prepare the message, and transmit it to higher and lower headquarters.

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MANUAL TASK

ELEMENT: NBC Main

FUNCTION: Prepares and schedules chemical fire plans in support of the division scheme of maneuver; plan includes nuclear/chemical target list based upon target intelligence received from the G2 element and DIVARTY.

TASK: Prepares and schedules nuclear/chemical fire plans.

FREQUENCY ESTIMATE: 1 every 3 or 4 days

CRITICALITY: 2

DUTY POSITION: Division Chemical Officer, Shift Officer

INPUTS

- Basic operations order
- Operation overlay
- Intelligence annex
- G3 guidance
- TOS/TACFIRE impact - This task is not considered for TOS assistance because annex development will be accomplished manually. Data derived from TACFIRE nuclear and chemical analyzes will be a major input to fire planning for the annex. The completed annex will be coordinated and processed in the manual mode.

OUTPUTS

Appendix to fire support plan for chemical targets and fire

COORDINATION

- FSE
- G3
- G2
- Completed appendix is provided by the FSE for inclusion into the fire support annex.
- The chemical fire plans will be coordinated with the division chemical officer before being transmitted to G3 plans.
- The chemical staff specialist will provide the necessary administrative support to the shift officer as may be required.

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MANUAL TASK

ELEMENT: NBC Main

FUNCTION: Performs vulnerability analysis and post strike analysis of enemy chemical strikes.

TASK: Continuously evaluates vulnerability of critical installations and friendly units to postulate enemy strike and determines potential damage inflicted.

FREQUENCY ESTIMATE: Minimum of 2 times a day

CRITICALITY: 1 or 2

DUTY POSITION: Shift Officer, Operations Sergeant, Computer/Plotter

INPUTS

- Basic postulated targeting is formed by G2 in terms of target, weapons, and employment.
- TOS/TACFIRE impact - The shift officer or operations sergeant will prepare the target data and transmit by VFMED to TACFIRE for analysis.

OUTPUTS

- Analysis results in terms of vulnerability are provided to G3 in the form of a briefing (Shift officer will determine whether or not the data warrant a briefing of the G3).
- Data are provided twice a day for the commander's briefing.
- TOS/TACFIRE impact - The TACFIRE analysis should be received by the shift officer and summarized for display and storage in a staff working file if applicable. The operations sergeant or computer/plotter would be required to develop the summarized data into a display file using the TOS graphics capability and store it for future references.

COORDINATION

- G2
- Staff weather officer
- TACFIRE shift officer

NOTES

- Analysis is based upon potential enemy availability and capability provided by G2 officers in charge.

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- Friendly situation movement is monitored in terms of potential targeting. As troop movement occurs, vulnerability analyses are initiated.
- Wind vectoring is accomplished every 6 or 12 hours.
- Post strike analysis is handled in the same fashion except that real targets as opposed to postulated targets are used for the analysis.

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MANUAL TASK

ELEMENT: NBC Main

FUNCTION: Performs vulnerability analysis and post strike analysis of enemy nuclear and chemical strikes.

TASK: Conducts post strike analysis of enemy chemical strikes and determines nuclear fallout damage to selected friendly units and critical installations.

FREQUENCY ESTIMATE: 10 per day

CRITICALITY: 1

DUTY POSITION: Shift Officer, Operations Sergeant, Chemical Specialist

INPUTS

NBC-1 initial observers report

- Time of Burst
- Location
- Yield
- TOS/TACFIRE impact - The relay message would be a logical candidate for transmitting this message to NBC personnel at division with a flash precedence.

OUTPUTS

- NBC-2 location and impact (evaluated data report)
- NBC-3 detailed fallout data (all data at this point are still predictive)
- Briefing to the G3 (all subordinate units and corps are on distribution)

COORDINATION

- G2
- G3
- TACFIRE Shift Officer

NOTES

- First hit is always passed flash priority as soon as possible to all concerned. Subsequent NBC-1 should be sent with an immediate priority.
- NBC filters, confirms, and publishes NBC-2; validate the impact locations before doing calculations.

- NBC-3 data are used by subordinate units to update their predicted area of contamination.
- NBC-1 probably would come in by landline (G2-G3 FM net). The relay message could be used as a backup method if the FM net becomes cluttered.
- Input processing:
 - Operations sergeant - receives and screens NBC-1
 - Shift officer - assigns a division strike serial number to the burst
 - Computer/plotter - plots the impact on the situation map
 - Chemical specialist - develop the NBC-2 report while other efforts are going on
 - Computer/plotter - attempts to process and determine yield
 - Clerk typist - becomes an RTO and transmits the NBC-2 or takes it to the G2 for transmission on FM
- TOS/TACFIRE impact - NBC-1 data provided by lower echelons need to be transmitted to TACFIRE through VFED to task the generation of NBC-3 predicted fallout data and strike warning outputs, if applicable. The first NBC-1 would also have to be transmitted to corps using the command FM net or relay message, flash precedence.
- The NBC-1 data need to be screened by location and time, eliminate duplicate reports. Screened reports, NBC-2, developed by the operations sergeant, or computer/plotter, and chemical specialist need to be loaded in an NBC fallout staff working file and transmitted to all lower echelons for planning. This action provides permanent file record and makes use of TOS communications capability.
- The TACFIRE generated fallout data will be provided to the NBC section through the VFED terminal. The data received will have to be reformatted by the operations sergeant or computer/plotter and chemical specialist into the NBC-3 predicted fallout data format for transmission to lower echelons. Strike warning messages would also have to be reformatted or stored in the file and transmitted to lower and higher headquarters. This action also provides permanent file record of the action and makes use of the TOS communication capability.

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TOS ASSISTED TASK

ELEMENT: NBC Main

FUNCTION: Performs vulnerability analysis and post strike analysis of enemy nuclear/chemical strikes.

TASK: Determines actual fallout conditions.

FREQUENCY ESTIMATE: 10 per day

CRITICALITY: 1

DUTY POSITION: Shift Officer, Operations Sergeant, Computer/Plotter, Chemical Specialist

INPUTS

- NBC-4 radmon data from field units
- Units will report if readings:
 - go above 1 rad per hour
 - peak
 - go below 1 rad per hour

COORDINATION

Basic coordination is with the G3

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Data transfer
- Graphics

PROCEDURES

- TOS assisted - The operations sergeant and chemical staff specialist will receive and process NBC-4's. The relay message would be the simplest method for lower echelons to code and transmit the NBC-4.
- Manual - Chemical staff specialist will use NBC-4 to create the four basic radiation contour lines required. The dose rate readings also have to be recalculated by the operations sergeant to outside dose rate readings.
- TOS assisted - The shift officer or operations sergeant will enter the TOS graphics capability and generate an overlay for use in briefing the G3. The chemical specialist will concurrently develop an NBC-5 message for insertion in the staff working file and transmission to all lower echelons.
- Manual - The shift officer will analyze the radiation effects on the tactical maneuvering units and provide the G3 an estimate of how long troops

can conduct operations in a given area and prescribe what precautionary measures need to be instituted. Large screen access could be required.

OUTPUT

The output of this task is the production and dissemination of NBC-5 data to all tactical units. Additionally, estimates are provided to the G3 involving length of stay in a contaminated area and what precautionary measures might be implemented. A graphics overlay depicting the effect on the division should also be generated and shared with the staff.

NOTES

- An algorithm to assist the NBC personnel in assembling the radiation contour map and NBC-5 data would appreciably expedite this procedure and insure rapid dissemination of actual radiation data to tactical units.
- Any follow on activities resulting from the briefing will be the responsibility of the G3. The division chemical officer could be tasked to support the G3 in developing a course of action.
- Area contamination results from friendly or enemy use of:
 1. Air burst nuclear weapons - neutron induced contamination
 2. Surface burst nuclear weapons - fallout contamination
 3. Chemical weapons - persistent agent contamination
- CBRE evaluation for G3 may include:
 1. Degree of contamination at selected points or areas
 2. Effect contamination may have on units
 3. Protection required for troops operating in designated area
 4. Length of time troops can stay in an area
 5. Amount and type of decontamination for troops
 6. Equipment and supplies required after operating in a designated area
 7. Amount and type of decontamination equipment and decontaminates

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TOS ASSISTED TASK

ELEMENT: NBC Main

FUNCTION: Performs vulnerability analysis and post strike analysis of enemy nuclear/chemical strike.

TASK: Maintains a radiation exposure file for all levels.

TASK FREQUENCY: As required

CRITICALITY: 1

DUTY POSITION: Shift Officer, Operations Sergeant, Computer/Plotter

INPUTS

Radiation exposure levels for battalions and brigade echelons as reported by NBC personnel

COORDINATION

- G3
- Brigade
- Surgeon

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Graphics

PROCEDURES

- TOS assisted - The shift officer will be responsible for establishing a unit radiation exposure file. A staff working file of sufficient size to allow battalions and separate units to report battalion's radiation status category and average dose rate to division is required.
- TOS assisted - The operations sergeant or computer/plotter will query the file periodically to determine additions to the file. The timing for file review could be specified by NBC standing operating procedures. File review would out of necessity be conducted more frequently after receipt and confirmation of an NBC-1 report.
- Manual - The division chemical officer and surgeon will use the file data to prepare a briefing for the commander on radiation exposure status of division units in order that he may establish radiation exposure guides, degrees of risk, and composition of task forces for missions requiring radiation exposure.

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OUTPUT

The output of this task is the collection, interpretation, and presentation of radiation effects data to the commander. These data can then be interpreted into guides and controls for use of the maneuvering forces.

NOTES

- The exposure table can be used by the G3 in developing unit selection for maneuvering plans and troop rotation.
- The ability to conduct an SRI against the staff working file would be desirable. This would eliminate the periodic querying of the file by the operations sergeant and allow the file to be sorted and examined when the accumulative dose rate for a unit starts to rise above a significant level.

PERSONNEL

TABLE 20.
NBC Element Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
Division chemical officer	05	74A	1	05	74A	1
CBRE shift officer	-	-	-	03	74A	2
Operations sergeant	-	-	-	E8	54E	1
Computer/plotter	-	-	-	E7	54E	1
Chemical staff specialist	E5	54E20	<u>2</u>	E5	54E	<u>2</u>
Total Officers/Enlisted Men			1/2			3/4

This table depicts the manning a division might employ to sustain a 24-hour operation in a tactically deployed manual element and the manning proposed for the element to sustain a 24-hour operations using TOS. The recommendations do not provide for relief or replacement personnel.

The NBC element in a division equipped with TOS will deploy personnel to the division main command post. Support of the tactical command post could occur but will not be addressed in this discussion. Manning requirements exist for two shifts within the division tactical operations center.

No requirement exists to alter the functioning or responsibilities of the division chemical officer. He supervises the overall functioning of the CBRE and is available to advise the commander and other principal staff officers as required. There is a requirement for two CBRE shift officers to supervise the overall conduct and activities of the CBRE and to function as the chemical officer in his absence. The shift officer would supervise one of the two shifts, coordinate TACFIRE technical support, review and analyze vulnerability data, establish staff working files, plan and coordinate fire plans, determine fallout and hazard affects on maneuvering units, coordinate with the FSE and

G3, and utilize the TOS console as may be required. These positions are in keeping with the intent of FM 3-12, Operational Aspects of Radiological Defense¹, and do not appear to overlap or duplicate tasks currently being performed by the FSE.

It is suggested that an operations sergeant and a computer/plotter E8 and E7, respectively, be added to function as the operations sergeant for the two shifts. Both have been adequately trained, are from the same career field, and basically are interchangeable. Each position would be expected to assist the shift officer in assessing vulnerability data for friendly units, preparing strike warning data for transmission, updating staff working files, generating graphics display files, performing fallout predictions and analysis, and monitoring division radiation files for significant changes. Additionally, the operations sergeant and computer/plotter would be expected to provide administrative support, journal maintenance, and relocation support required by the CBRE. These tasks do not appear to duplicate those of others in the division tactical operations center and are considered necessary to conduct division CBRE operations.

The two chemical staff positions warrant retention and will be responsible for assisting in the development and dissemination of strike warning messages, administrative support to the shift officer in the fire support planning for the operations order, generation and dissemination of NBC-2 and NBC-5 to support fallout operations and other message composition, administrative support, and relocation support as defined by the operations sergeant.

RECOMMENDATIONS

Assign a console for NBC personnel in the division tactical operations center.

No console assignment has currently been defined or designated for NBC operations. Due to the nature of the work and the need to have access to the TACFIRE VFMED, NBC operations should be colocated with the FSE, however, the console is currently planned to support the FSE, G3 air, and the DAME. It is suggested the G3 air and DAME be considered for reassignment to other consoles within the division tactical operations center. The addition of another console in the operations area to support staff liaison positions or for use as a backup might also be considered.

¹FM 3-12, Operational Aspects of Radiological Defense, Department of the Army, August 1968.

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Transmit strike warning messages using relay messages during TOS operations.

Manual strike warning messages are currently transmitted to all units on the G2 FM net using flash precedence with the G3 FM net as a backup. This procedure could tie up FM nets when peak periods of nuclear and chemical processing are occurring, thereby limiting FM net use by lower echelon units for other immediate tactical requests or problems. It is suggested that the relay message be used as an additional means to accomplish this task during TOS operations. This procedure will make use of TOS capabilities and permit the sender to transmit to all addressees simultaneously using flash precedence.

Use the TOS relay message capability to transmit NBC-1 messages.

NBC-1 messages are prepared and forwarded to division using the G2-G3 FM nets. The initial NBC-1 is to be sent flash precedence to all subscribers, including corps. All subsequent reports are to be transmitted with an immediate precedence and are internal to the division. This message traffic could also have a tendency to tie up the FM nets during peak periods of nuclear activity. It is suggested that the initial NBC-1 be passed on the G3 FM net using the flash precedence and all subsequent NBC-1's be transmitted by relay message to NBC using the immediate precedence. This frees the FM nets and more fully utilizes TOS capabilities to conduct operations.

Provide only evaluated burst locations to TACFIRE.

TACFIRE fallout generation is initiated by introducing NBC-1 data through the VFMED. It would appear that the TACFIRE correlation problem would be magnified by the introduction of a large number of division generated NBC-1 data. It is suggested that the procedure to provide TACFIRE with only evaluated burst locations be investigated for use during TOS operations.

Provide fallout plotting support for NBC operations.

NBC personnel are required to convert NBC-4 data into the four radiation contour lines to determine actual fallout conditions. This task is currently being performed manually. It is suggested that TOS software support for this task be investigated. Computer support would ensure more rapid fallout pattern generation and subsequent analysis by NBC personnel.

Provide the SRI capability with the staff working file.

The use of the staff working file for the division radiation exposure table is limited in that an SRI cannot be conducted against it. This causes NBC personnel to constantly query the file to determine changes or to review every change to the file as they come in. It would be more desirable if a significant dose rate level could be set by SRI and the shift officer notified when that level was reached by any unit.

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DIVISION AIRSPACE MANAGEMENT ELEMENT

GENERAL

The division airspace management element (DAME), under the staff supervision of the G3, consists of an air defense artillery (ADA) section and a division aviation section. Personnel from the ADA section are located at the main and tactical command posts. The division aviation section has personnel at the main command post and the division airfield.

The DAME will share a TOS console with the FSE at the main command post. There is no console assigned to the DAME at the tactical command post. The consoles assigned to the G2 and G3 elements at the tactical command post should be shared by the DAME in accordance with standing operating procedures developed for use of the consoles.

MISSION

The mission of the DAME is to coordinate, integrate, and regulate the use of the division airspace by army airspace users to achieve effective and efficient use of available airspace in concert with the other military services.

OVERVIEW OF TOS OPERATIONS

The DAME will perform the airspace management and coordination necessary to identify and resolve potential conflicts in the use of division airspace within the division area of operations. The DAME will coordinate with the corps airspace management element, forward air control post, fire support element, and division G2 and G3 elements to keep fully appraised of airspace uses and planned operations impacting on the use of division airspace.

The DAME will use TOS for developing and disseminating airspace control and coordinating procedures to be used within the division.

Flight corridors, avenues of approach for aircraft, and minimum risk routes for aircraft will be developed and stored in a DAME staff working file and the tactical dispositions file. These files can be accessed by other elements and used for briefing the division commander. Information in the DAME staff working file will be limited by system data base storage constraints established by the TOS system controller. For this reason, the staff working file should be used for storing data requiring high visibility, frequent update, or wide distribution within division and external command elements having access to the TOS data base.

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Weapons control and coordinating instructions will be disseminated without TOS assistance and ADA and aviation statuses will be maintained manually. The coordination required for the use of aircraft for combat support will be accomplished faster and with the needed flexibility by using voice communication instead of TOS. The aviation and airspace use annexes to division operations orders and plans will be prepared manually, saving time and computer storage needed for tactical applications. Even though these tasks remain basically manual, the TOS data base will be accessed to provide much of the information needed for their performance.

FUNCTIONS AND TASKS

Functions and tasks performed by the DAME are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 21.

Following the table is a summary of each task stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs.

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TABLE 21.
Division Airspace Management Element Positions, Functions, and

FUNCTIONS AND TASKS	DAME Operations Officer	Assistant Operations Officer	Operations Sergeant	Assist Operat Sergeant
Coordinates the use of division airspace.				
Prepares the airspace use annex to division operations orders and plans.				
Provides advice on the use of division airspace.	X	X		
Disseminates airspace control and coordinating instructions.	(X)	(X)	(X)	(X)
Disseminates weapon control and coordinating instructions.	X	X	X	X
Coordinates ADA operations.				
Maintains and provides current ADA status information.	X	X	X	X
Makes recommendations for the use of ADA assets.	X	X		
Coordinates ADA operations.	X	X	X	X
Recommends changes to ADA SOPs, task organization, deployment, and policy.	X	X		
Coordinates aviation support within the division.				
Coordinates the use of army aircraft for combat support.				
Makes recommendations for the use of aviation assets.				
Maintains and provides aviation status information.				

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and Tasks

stant ations eant	Radio Operator	Aviation Staff Officer	Operations Sergeant	Clerk Typist
		X	Y	X
	X	X	X	X
(X)	X	(X)	(X)	X
(X)				
X	X			
X	X			
X	X			
X	X			
		X	X	X
		X		
		X	X	X

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TABLE 21.
Division Airspace Management Element Positions, Functions

FUNCTIONS AND TASKS	DAME Operations Officer	Assistant Operations Officer	Operations Sergeant
Coordinates the use of army aircraft for tactical troop movement and attack helicopter operations.			
Prepares the aviation annex to operations plans and orders.			
Performs the hookup, energizing, initialization, and checkout of the TOS console.	(X)	(X)	(X)
X - Manual Task			
(X) - TOS Assisted Task			

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Operations, and Tasks

	Assistant Operations Sergeant	Radio Operator	Aviation Staff Officer	Operations Sergeant	Clerk Typist
--	-------------------------------------	-------------------	------------------------------	------------------------	-----------------

X X X

X X X

(X)

(X)

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MANUAL TASK

ELEMENT: DAME Main

FUNCTION: Coordinates the use of division airspace.

TASK: Prepares the airspace use annex to division operations orders and plans.

FREQUENCY ESTIMATE: 3 per day

CRITICALITY: 2

DUTY POSITION: Aviation Staff Officer, Operations Sergeant, Clerk Typist

INPUTS

- Corps operations order or plan
- Commander's guidance
- G3's guidance

OUTPUTS

Airspace use annexes to the operations orders and plans

COORDINATION

- | | |
|----------|------------------------|
| Inputs: | • Corps G3 |
| | • Division commander |
| | • Division G3 |
| Outputs: | • Division G3 |
| | • Subordinate unit S3s |

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MANUAL TASK

ELEMENT: DAME Main

FUNCTION: Coordinates the use of division airspace.

TASK: Provides advice on the use of division airspace.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 3

DUTY POSITION: DAME Operations Officer, Aviation Staff Officer, Assistant Operations Officer, Operations Sergeant, Clerk Typist, Radio Operator

INPUTS

- ADA weapons status and fire positions
- Unit locations
- Coordinating altitudes
- Commander and G3 guidance on airspace management
- Daily summary of air operations
- Time and location of jamming operations
- Friendly and enemy nuclear strikes, including effective downwind messages

OUTPUTS

- Army special use air routes
- Minimum risk routes for high performance aircraft
- Multiple flight designation
- Flight corridors
- Coordinating altitude information
- Weapons-free and other restricted areas
- Standard use army aircraft routes
- Standing air defense rules of engagement
- Identification criteria
- Air defense warnings

COORDINATION

- TACP
- FSE
- Forward air control post
- Corps airspace management element
- Brigade airspace management element

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- G2
- G3
- G4
- Electronic warfare officer
- Chemical officer
- Subordinate unit S3s

NOTES

- Coordination of requests for air support, including preplanned and immediate close air support and air reconnaissance, is effected with the DAME to preclude airspace problems. This coordination is accomplished faster and with more flexibility using voice communications.
- Even though this task remains basically manual, the SWFs, BIR, UOR, TD, and TER can be queried to provide much of the information needed for providing advice on the use of division airspace.

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TOS ASSISTED TASK

ELEMENT: DAME Main

FUNCTION: Coordinates the use of division airspace.

TASK: Disseminates airspace control and coordinating procedures.

FREQUENCY ESTIMATE: 5 per day

CRITICALITY: 3

DUTY POSITION: DAME Operations Officer, Assistant Operations Officer, Aviation Staff Officer, Operations Sergeant, Assistant Operations Sergeant, Radio Operator, Clerk Typist

INPUTS

- Locations of FSE, support elements, all units
- Terrain features
- Assessment of tactical situation
- Time and location of ECM activities
- Preplanned missions
- Air defense warnings

COORDINATION

- TACP
- FSE
- Forward air control post
- G2
- G3
- G4
- Electronic warfare officer
- Chemical officer
- Brigade airspace management element
- Subordinate unit S3s

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Graphics
- Data transfer
- File update

PROCEDURES

- TOS assisted - The operations sergeant will query the TER, UOR, TD, and staff working files to determine unit locations, terrain features, pre-planned missions, the tactical situation, restricted areas, and flight corridors.
- TOS assisted - The operations sergeant will access, transfer, and store required data in the DAME staff working file.
- TOS assisted - The operations sergeant will initiate the interactive generation capability to develop the displays and free text needed to determine and communicate airspace coordinating and control procedures.
- TOS assisted - The operations sergeant will determine and set the category display selection criteria for displaying the generated displays and any free text data.
- TOS assisted - The aviation staff officer will review the display and free text data and request any changes needed.
- TOS assisted - The operations sergeant will modify the display and free text as required.
- TOS assisted - The aviation staff officer will display the airspace control and coordinating features and free text at the locations necessary for effecting the required coordination and notify the corps airspace management element of their availability.
- TOS assisted - After corps review and approval, the airspace control and coordinating features will be loaded in the TD file by the operations sergeant.

OUTPUTS

The output of this task is the determination, development, and dissemination of airspace control and coordinating procedures for minimum risk routes, special army air routes, coordinating altitudes, flight corridors, weapon conditions and restrictions, rules of engagement, identification criteria, and multiple flight designations.

NOTES

This task is TOS assisted because information needed for its performance is contained in the TOS data base, the large screen graphics display capability facilitates the coordination, and communication to the units is more rapid using TOS.

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MANUAL TASK

ELEMENT: DAME Main CP and Tac CP

FUNCTION: Coordinates the use of division airspace.

TASK: Disseminates weapon control and coordinating instructions.

FREQUENCY ESTIMATE: 5 per shift

CRITICALITY: 4

DUTY POSITION: DAME Operations Officer, Assistant Operations Officer, Operations Sergeant, Assistant Operations Sergeant, Radio Operator

INPUTS

- Instructions from corps airspace management element
- Division G3 instructions

OUTPUTS

Control and coordination requirements for ADA dissemination by voice, teletype, or courier

COORDINATION

Inputs: Corps airspace management element

Outputs: Subordinate unit S3s

NOTES

Division G3 can make the weapons control and coordinating instructions more restrictive, but not less restrictive, than those received from the corps airspace management element.

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MANUAL TASK

ELEMENT: DAME Main

FUNCTION: Coordinates ADA operations.

TASK: Maintains and provides current ADA status information.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 2

DUTY POSITION: DAME Operations Officer, Assistant Operations Officer,
Operations Sergeant, Assistant Operations Sergeant, Radio
Operator

INPUTS

Status information from S3s at ADA units

OUTPUTS

Division ADA status information

COORDINATION

Inputs: • S3 at ADA units
 • G3
Outputs: • Commander
 • G3
 • TACP
 • Corps

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MANUAL TASK

ELEMENT: DAME Main CP and Tac CP

FUNCTION: Coordinates ADA operations.

TASK: Makes recommendations for the use of ADA assets.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 2

DUTY POSITION: DAME Operations Officer, Assistant Operations Officer,
Radio Operator

INPUTS

- Mission statements
- Operations orders and plans
- ADA situation reports
- ADA status reports

OUTPUTS

Recommendations on use of ADA assets

COORDINATION

Inputs: • G3
 • Commander
 • ADA unit S3

Outputs: • G3
 • Commander

NOTES

The location of ADA units, radars, and flight corridors (friendly and enemy) could be presented on the large screen display to show the commander ADA coverage for his consideration in using ADA assets.

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MANUAL TASK

ELEMENT: DAME Main CP and Tac CP

FUNCTION: Coordinates ADA operations.

TASK: Coordinates ADA operations.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 3

DUTY POSITION: DAME Operations Officer, Assistant Operations Officer,
Operations Sergeant, Assistant Operations Sergeant, Radio
Operator

INPUTS

- ADA situation reports
- ADA status reports
- Operations orders and plans
- ADA standing operating procedures

OUTPUTS

Recommendations to the G3 about use of ADA assets

COORDINATION

Inputs: Operations officers for ADA at corps, subordinate, and adjacent
units

Outputs: Division G3

NOTES

The location of ADA units, radars, and flight corridors (friendly and enemy) could be presented on the large screen display to show the commander ADA coverage for his consideration.

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MANUAL TASK

ELEMENT: DAME Main

FUNCTION: Coordinates ADA operations.

TASK: Recommends changes to ADA standing operating procedures, task organization, deployment, and policy.

FREQUENCY ESTIMATE: Determined by the tactical situation

CRITICALITY: 2

DUTY POSITION: DAME Operations Officer, Assistant Operations Officer

INPUTS

- ADA situation reports
- ADA standing operating procedures
- ADA policies
- ADA deployment
- Task organization
- Operations plans and orders

OUTPUTS

Recommendations for changes to standing operating procedures, task organization, ADA deployment, and ADA policies

COORDINATION

Inputs: • S3 at ADA units
 • G3
 • Commander
 • Chief of Staff

Outputs: G3

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MANUAL TASK

ELEMENT: DAME Main

FUNCTION: Coordinates aviation support within the division.

TASK: Coordinates the use of army aircraft for combat support.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 2

DUTY POSITION: Aviation Staff Officer, Operations Sergeant, Clerk Typist

INPUTS

- Requests for aerial fire support
- Operations orders and plans
- Requests for aerial medical evacuation
- Requests for airlift of fuel, equipment, ammunition, and food
- Requests for aerial reconnaissance and surveillance
- Aviation status

OUTPUTS

Tasking directive to the aviation command transmitted verbally and followed up with a written fragmentary order. Response to the requestor for air support stating the disposition of the request

COORDINATION

- Inputs: • Unit requesting air support
 • G3
- Outputs: • Unit requesting air support
 • G3
 • Aviation command

NOTES

- The coordination with the G2 and G3 elements required for the use of aircraft for combat support is accomplished faster and with the needed flexibility by using voice communications instead of TOS.
- The TOS data base should be accessed to provide needed status information and the DAME SWF should contain data pertinent to airspace management such as flight corridors, weapons-free and other restricted areas, minimum risk routes, and coordinating altitudes.

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MANUAL TASK

ELEMENT: DAME Main

FUNCTION: Coordinates aviation support within the division.

TASK: Makes recommendations for the use of aviation assets.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 2

DUTY POSITION: Aviation Staff Officer

INPUTS

- Assessment of tactical situation
- Aviation status
- Transport requirements for troops, supplies, and equipment
- Reconnaissance and surveillance requirements
- Medical evacuation needs
- Operations orders and plans
- Aerial fire support requirements

OUTPUTS

Verbal recommendations for use of aviation assets to commander and G3

COORDINATION

- Inputs: • G3
 • Aviation units
 • G1
 • G4
- Outputs: • Commander
 • G3

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MANUAL TASK

ELEMENT: DAME Main

FUNCTION: Coordinates aviation support within the division.

TASK: Maintains and provides aviation status information.

FREQUENCY ESTIMATE: 1 per day

CRITICALITY: 3

DUTY POSITION: Aviation Staff Officer, Operations Sergeant, Clerk Typist

INPUTS

- Aviation status reports from units
- Status of airplane critical parts and major end items
- Aviation personnel losses and gains

OUTPUTS

Aviation status reports and aviation status briefings

COORDINATION

- Inputs: ● Subordinate unit S3s
 ● G4
 ● G1
- Outputs: ● Commander
 ● G3
 ● G1
 ● Corps airspace management element

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MANUAL TASK

ELEMENT: DAME Main

FUNCTION: Coordinates aviation support within the division.

TASK: Coordinates the use of army aircraft for tactical troop movement and attack helicopter operations.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 2

DUTY POSITION: Aviation Staff Officer, Operations Sergeant, Clerk Typist

INPUTS

- Operations orders and plans
- Guidance from the G3
- Guidance from the commander
- Requests for tactical troop movements
- Requests for attack helicopter operations

OUTPUTS

Recommendations for use of aviation assets to support tactical troop movements and attack helicopter operations

COORDINATION

- Inputs:
- Commander
 - G3
 - Commanders of subordinate units requesting tactical troop movement or attack helicopter operations
- Outputs:
- Commander
 - G3

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MANUAL TASK

ELEMENT: DAME Main

FUNCTION: Coordinates aviation support within the division.

TASK: Prepares the aviation annex to operations orders and plans.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 3

DUTY POSITION: Aviation Staff Officer, Operations Sergeant, Clerk Typist

INPUTS

- Concept of operations briefing
- Guidance from the G3
- Guidance from the commander
- Guidance from the G2

OUTPUTS

Aviation annex to the operations orders and plans

COORDINATION

- Inputs: ● Commander
- G3
- G2
- Outputs: ● G3
- G2
- G4
- S3s of affected units

NOTES

- The annex includes mission, execution, concept of operations, and command and signal.
- Output coordination is situationally determined and may include air defense early warning, fire support elements, and any unit affected by the air support plans.

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PERSONNEL

TABLE 22.
Division Airspace Management Element Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
<u>Aviation Section</u>						
Aviation staff officer	O5	E2518	1	O5	E2518	1
Operations sergeant	E8	71P50	1	E8	71P50	1
Clerk typist	E4	71B30	1	E4	71B30	1
<u>Air Defense Artillery Section</u>						
DAME operations officer	O4	1174	1	O4	1174	1
Assistant operations officer	O3	1174	1	O3	1174	1
Operations sergeant	E7	16H40	1	E7	16H40	1
Assistant operations sergeant	E6	16H30	1	E6	16H30	1
Radio operator	E4	05E20	<u>2</u>	E4	05E20	<u>2</u>
Total Officers/Enlisted Men			3/6	3/6		

The above manning chart depicts the manning for the DAME prescribed doctrinally and the manning recommended for the DAME in a division operating with TOS.

The DAME is composed of an aviation section and an ADA section colocated in the main command post. The ADA section deploys representatives to the tactical command post, but the aviation section normally does not.

There appears to be no need to adjust the manning to support operations using TOS. Most of the aviation section activities will be during daylight hours, so the minimal manning recommended should be sufficient to handle the tasks. The ADA section has two officers, two sergeants, and two radio operators assigned with one of each at the main command post and one of each at the tactical command post. While the demand for 24-hour capability exists for the ADA section, it is expected that the crews will shift tasking between the two locations to accommodate the shift requirements for 24-hour operations with the recommended manning.

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The functions and tasks performed by the DAME fall into three basic categories: coordinating the use of division airspace, coordinating ADA operations, and coordinating the use of aviation support. The aviation section and the ADA section are involved in coordinating the use of division airspace. The ADA section performs the tasks associated with coordinating ADA operations and the aviation section performs the tasks involved with coordinating aviation support within the division.

The DAME will share TOS consoles at both command posts with other elements. All officers and sergeants assigned to the DAME should become proficient in the use of the TOS console for retrieving information required in performing their tasks and for assisting them in preparing and disseminating airspace control and coordinating procedures. All DAME personnel may participate in disseminating airspace control and coordinating procedures and this is the DAME task which is most assisted by TOS.

The DAME operations officer located at the main command post will supervise the ADA section, provide advice on use of the division airspace, disseminate airspace control and coordinating procedures, disseminate weapons control and coordinating instructions, and coordinate ADA operations within the division.

The assistant operations officer for the ADA section will be located at the tactical command post. He will coordinate ADA and airspace control procedures from the tactical command post with the ADA section at the main command post and make recommendations to the G3 on use of division airspace and ADA assets. He will supervise the other ADA section personnel located at the tactical command post.

The enlisted personnel in the ADA section at both locations are needed to assist with information retrieval and dissemination using TOS and radio.

The aviation staff officer supervises the aviation section which is primarily concerned with coordinating aviation support within the division. His coordination with the division airfield will be handled more rapidly, efficiently, and with the needed flexibility without using TOS. He also assists with coordinating the use of division airspace and uses TOS to prepare and disseminate airspace control and coordinating procedures.

The enlisted personnel assigned to the aviation section of the DAME assist with information retrieval and dissemination, using TOS and manual means.

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RECOMMENDATIONS

Remove the TOS console from the division airfield.

The analysis of functions and tasks of the aviation section indicates that coordination with the detachment at the division airfield can be handled more rapidly, efficiently, and with the needed flexibility without using TOS. It appears that the TOS console at the division airfield would be used for inputting aviation status. Aviation status should be maintained manually and the TOS console removed from the division airfield. The aviation section would continue to have access to the TOS console shared by the DAME.

LOGISTICS ELEMENT

GENERAL

The Logistics (G4) section, supervised by the assistant chief of staff, G4, logistics, has elements located in the division main command post, the division tactical command post, and the division support area. The location of the G4 himself at any given time depends on the tactical situation, the desires of his commander, and his perception of where his presence is most beneficial to the mission.

The G4 element is responsible for the general planning and administration of the division procurement, maintenance, and transportation of military materiel and facilities; the transportation of military personnel; the maintenance of division vehicles and equipment; and damage control in the division area.

MISSION

The mission of the G4 element is to perform the administration, reporting, and planning of the movement and materiel requirements necessary to support the division's operations.

OVERVIEW OF TOS OPERATIONS

The G4 element will share a TOS console in the division main tactical operations center with the G1 element. The G4 element will use the TOS console to construct the service support paragraph (paragraph 4) of the division operations order when requested to do so by the G3; maintain liaison with the tactical command post to expedite solutions to logistics problems of an immediate nature; keep the commander informed of logistics solutions and plans; develop and recommend main supply routes and supply points; and develop and recommend rear boundaries. Additionally, the G4 will use the TOS console to query and monitor the TOS data base for logistical information bearing on the tactical situation.

Paragraph 4 of the division operations order will be generated by the G4 element using the TOS graphics capability and the UOR file. Any required logistical annex to the division operations order will be prepared manually to save time and computer storage needed for more urgent tactical matters.

The G4 element at the main command post will coordinate with the assistant G4 at the tactical command post in solving immediate logistical problems received on the FM voice net. This will continue to be a manual task. In addition to responding to immediate logistical problems, G4 personnel can initiate queries and SRIs to detect potential logistical problems to assist their planning.

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G4 personnel will use the system's graphics capability to develop displays to inform the commander of significant logistical events. The TOS large screen display will be the primary vehicle for presenting information to the commander.

Development of the main supply route (MSR) and supply points to support the development of the operations order will be accomplished using the system's graphics capability. G4 personnel will create TOS graphics displays showing obstacles, key terrain, observation and fire, roads, rivers, air strips, and friendly and enemy unit locations to assist them in determining the MSR and supply points to be used. The MSR and supply points will be displayed. The developed displays might be stored for reference or used in fragmentary order development. The large screen display will be used to show MSR and supply points to command and staff personnel.

G4 personnel will develop recommended changes to the division rear boundary using the graphics capabilities of TOS. After developing the rear boundary on their console, G4 personnel will transfer the display to the large screen graphics for coordination with the G3 and presentation to the chief of staff. The approved boundary will be reported to the corps G4 element for integration with corps boundaries. G3 personnel will enter the new division boundary data in the tactical dispositions file because the G3 manages the FRENIT data base and its files.

Area damage control, division movement activities, and maintaining statuses of supplies, vehicles, and equipment necessary for the accomplishment of the unit mission will continue to be basically manual. Information in the TOS data base such as boundary data, terrain data, and unit locations can be accessed to facilitate task performance. Recommendations included in this element discussion address how TOS might be used in maintaining status information and assisting in preparing movement tables.

FUNCTIONS AND TASKS

Functions and tasks performed by the G4 element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 23.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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G4 Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	G4	Assistant G4	Clerk Typist	Light Vehicle Driver
Planning				
Prepares paragraph 4 of the operations plan or order and the service support annex to the operations order.	X	(X)	X	
Recommends policies and procedures for implementing area damage control operations within division boundaries.	X	X		
Maintains current information on the status of supplies, including nuclear weapons with or available to the command, necessary for the accomplishment of the unit mission.	X	X	X	X
Recommends division movement policies and procedures and supervises division movement activities.	X	X		
Maintains current information on the maintenance status of vehicles and equipment necessary for the accomplishment of the unit mission.	X	X	X	X
Control				
Maintains close liaison with the tactical command post to assist in expediting solutions to logistics problems of an immediate nature.	X	X		
Keeps the commander informed on aspects of the logistics situation and plans which impact on the tactical situation.	(X)	(X)		

TABLE 23.
G4 Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	Assistant		Clerk Typist	Light Vehicle Driver
	G4	G4		
Recommends the main supply route based on the tactical and administrative situation, the area of operations, and the enemy situation.	(X)	(X)		
Recommends location of the division rear boundary based on the tactical and administrative situation and the location of adjacent unit rear boundaries.	(X)	(X)		
Performs the hookup, energizing, initialization, and checkout of the TOS console.		(X)	X	X
<hr/> X - Manual Task (X) - TOS Assisted Task				

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TOS ASSISTED TASK

ELEMENT: G4 Main

FUNCTION: Planning

TASK: Prepares paragraph 4 of the operations plan or order and the service support annex to the operations order.

FREQUENCY ESTIMATE: Operations order change, frag every three days

CRITICALITY: 1

DUTY POSITION: G4, Assistant G4, Clerk Typist

INPUTS

- Mission statement
- Information about supplies, transportation, maintenance, and service for combat support
- Friendly force information
- Enemy force capability information

COORDINATION

- G2 for enemy force capability information
- G3 for input to the operations plan/order, mission statement, and friendly force information

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Graphics
- Data transfer
- File update

PROCEDURES

- Manual - The G3 will request that the G4 prepare paragraph 4 of the operations order and assign file space for its entry in the TOS data base.
- TOS assisted - The assistant G4 will query the ENSIT and FRENISIT data base and the terrain file to obtain information relative to paragraph 4 development.
- TOS assisted - The assistant G4 will access, assemble, and store the relevant TOS data items in the G4 staff working file.

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- TOS assisted - The assistant G4 will use the graphics capability to generate paragraph 4.
- Manual - The assembled paragraph will be reviewed within the G4 element.
- TOS assisted - The assistant G4 will modify the paragraph 4 if required and store it in the file space designated by the G3.
- TOS assisted - The assistant G4 will notify the G3 that paragraph 4 is complete and entered in the unit operations report file.

OUTPUTS

The output of this task is paragraph 4 of the operations order generated and stored in TOS.

NOTES

- Paragraph 4 of the operations order is prepared by the G4 at the request of the G3.
- The G4 will manually generate the service support annex to operations orders. It will be handcarried to the G3.

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MANUAL TASK

ELEMENT: G4 Main

FUNCTION: Planning.

TASK: Recommends policies and procedures for implementing area damage control operations within division boundaries.

FREQUENCY ESTIMATE: Initial plan published once and updated as conditions change

CRITICALITY: 2

DUTY POSITION: G4, Assistant G4

INPUTS

- Current enemy capability assessment as updated by the G2
- Assessments of enemy capability by informed contacts

OUTPUTS

Written policies and procedures for area damage control

COORDINATION

- G2 and informed contacts for assessment of enemy capability to inflict damage
- G3 for review of plan
- Division Support Command (DISCOM) for implementing area damage control
- Commander of units assigned to area damage control operations for information exchange
- Division transportation officer for movement planning for personnel and materiel

NOTES

- The DISCOM implements the area damage control operations within division boundaries.
- Emergency food and clothing are provided to the stricken area.
- Rescue, labor, and decontamination teams are provided for the area.
- Control measures to restrict movement and access are prepared and reported to the area damage control operation center.
- Personnel and materiel needed for damage control is determined by subordinate units and reported to the G4.

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MANUAL TASK

ELEMENT: G4 Main

FUNCTION: Planning

TASK: Maintains current information on the status of supplies, including nuclear weapons with or available to the command, necessary for the accomplishment of the unit mission.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 2

DUTY POSITION: G4, Assistant G4, Clerk Typist, Light Vehicle Driver

INPUTS

- Supply availability inputs from higher units
- Expenditure inputs from lower units
- Requisition for supplies from subordinate units
- DISCOM assessment of ability to move supplies to the users

OUTPUTS

- Updated supply status information
- Requests to corps (for example, need to change resupply rate)
- Daily battle loss reports
- Requisitions to corps for supplies

COORDINATION

- G3 for approval of required and controlled supply rates for ammunition
- DISCOM for depot status information and aerial resupply requests
- Division materiel management center (DMMC) for daily battle loss reported items
- S4 at DIVARTY and brigades for their unit status information
- Any unit commander for his unit status information
- Corps materiel management center for replacement of daily battle loss reported items

NOTES

- The G3 establishes priorities, prescribed loads, and available supply rates considering recommendations made by the G4. The G4 is responsible for supervising the supply actions.

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- The consideration of demand experience, incoming requisitions, reports of supplies on hand, and operations by the G4 determine supply requirements.
- Although no current division TOS system files exist for storing supply status, the status of nuclear weapons and other selected supplies is currently being considered for inclusion in the corps TOS system. If this happens, divisions will probably enter the division status in the corps files or similiar division files will be developed.

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MANUAL TASK

ELEMENT: G4 Main

FUNCTION: Planning

TASK: Recommends division movement policies and procedures and supervises division movement activities.

FREQUENCY ESTIMATE: Policies and procedures infrequently, movement supervision every few days

CRITICALITY: 2

DUTY POSITION: G4, Assistant G4

INPUTS

- Operations and fragmentary orders involving movement activities
- Number and location of vehicles
- Route reconnaissance information
- Main supply route and road net information

OUTPUTS

- Standing operating procedures for division movement activities including movement priorities, conflict resolution, intervals and rates, communications, clearance requests, transportation support, and responsibilities
- Division road movement tables and strip maps with routes and timing
- Movement control communications instructions
- Traffic clearances
- Traffic control and regulation measures
- Designation of the MSR

COORDINATION

- Unit commanders to control movements within their areas of responsibility
- Moving units for the preparation of proper unit road movement tables and strip maps
- Engineers for route reconnaissance information
- DISCOM for valid transportation requirements in excess of organic assets and air transport
- Provost marshal for route security
- Division traffic headquarters for plans, routes, schedules, and movement clearance

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NOTES

- Planning is ongoing, but policies change infrequently.
- The G3 is responsible for tactical troop movement and sets priorities for the transportation assets required.
- This task will remain manual, but recommendation 2 for this element concerns developing software to assist movement activities. Whether or not this is done, the TOS data base can be accessed for much of the information used in preparing movement plans. Terrain, tactical dispositions, and enemy situation files provide useful data for this task.

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MANUAL TASK

ELEMENT: G4 Main

FUNCTION: Planning

TASK: Maintains current information on the maintenance status of vehicles and equipment necessary for the accomplishment of the unit mission.

FREQUENCY ESTIMATE: Constant status update, daily report

CRITICALITY: 2

DUTY POSITION: G4, Assistant G4, Clerk Typist, Light Vehicle Driver

INPUTS

- Reports determined to be required by corps support command and division G4
- DISCOM designates maintenance unit locations
- Army maintenance management system continues in effect in tactical situations
- Standard maintenance procedures
- Schedules for inspection

OUTPUTS

- Report on logistical ability to support the tactical situation to commander and G3
- Daily logistical situation report to corps G4
- Recommendations to correct or improve maintenance deficiencies to commander
- Evacuation and repair policies for vehicles and equipment

COORDINATION

- G3 advises G4 of operations requiring special maintenance support
- DMMC input to G4 relative to battle loss reported items
- Corps and DMMC for input and output status reports
- Unit commanders to effect sound maintenance procedures
- Division commander and G3 to keep them informed of the materiel readiness of the command and its impact on projected operations

NOTES

- This task remains manual because TOS is not a reporting and communications system.

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- Maintenance responsibilities belong to the G4, but other staff members and the support command commander advise and assist in the maintenance program by observing maintenance programs and preparing plans and orders to be included in the maintenance program.
- Maintenance support planning in a theater of operations is discussed in FM 29-20.

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MANUAL TASK

ELEMENT: G4 Main and Tac

FUNCTION: Control

TASK: Maintains close liaison with the tactical command post to assist in expediting solutions to logistics problems of an immediate nature.

FREQUENCY ESTIMATE: As required

CRITICALITY: 2

DUTY POSITIONS: G4, Assistant G4

INPUTS

Notification of an immediate logistical problem

OUTPUTS

Response to a unit's requirement for immediate logistical support

COORDINATION

- Assistant G4 at the tactical command post to learn of logistical problems of an immediate nature and to discuss possible solutions to these problems
- DISCOM for materiel status and resupply information
- Brigade S4 to discuss logistical problems of an immediate nature and their solutions

NOTES

- The assistant G4 at the tactical command post receives immediate support requests over the FM command net and contacts the G4 element at the main command post to discuss possible solutions.
- The support requirements will be initiated at the main command post.
- Preliminary notification of logistical problems might be received via entries made by subordinate units to the TOS BIR file.

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TOS ASSISTED TASK

ELEMENT: G4 Main

FUNCTION: Control

TASK: Keeps the commander informed on aspects of the logistics situation and plans which impact on the tactical situation.

FREQUENCY ESTIMATE: Twice daily

CRITICALITY: 2

DUTY POSITION: G4, Assistant G4

INPUTS

- The requirement to brief the commander twice daily
- Mission statement
- Supply requirements and availability
- Transportation requirements and deficiencies

COORDINATION

- DMMC and DISCOM for status information on supplies and vehicles
- G3 for review of mission and tactical situation
- S4 at DIVARTY for status of fire support equipment and supplies
- S4 at brigades for equipment and supply status information

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Data transfer
- Graphics
- File update

PROCEDURES

- TOS assisted - The assistant G4 will query the BIR, UOR, TD, and staff working files to retrieve mission essential equipment solutions, status of critical supplies, MSR, brigade trains locations, ammunition supply locations, immediate supply problems, and other logistical information.
- TOS assisted - The assistant G4 will access, transfer, and store required data in the G4 staff working file.
- TOS assisted - The assistant G4 will initiate the TOS interactive generation capability to develop the logistics overlay graphics and the free text data for the commander's briefing.

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- TOS assisted - The assistant G4 will determine and set the category display selection criteria for displaying the generated information on the large screen graphics display.
- TOS assisted - The G4 will review the overlay display graphics and free text data.
- TOS assisted - The assistant G4 will modify the displays as directed by the G4.
- Manual - The assistant G4 will provide a list of the display file titles in the order of their presentation to the operator of the G3 large screen display device. The G3 device will be used for the briefing.
- TOS assisted - The G4 will present the logistics briefing using the developed displays and notes.

OUTPUTS

The outputs of this task include TOS queries, hardcopy of responses to queries, TOS graphics display files, and written notes used in the briefing.

NOTES

- The assistant G4 will be responsible for developing the briefing, but it will be presented by the G4.
- The preparation should begin about two hours before the scheduled briefing to allow enough time to retrieve and format the logistical information.
- Use of TOS large screen graphics should permit the removal of most permanent acetate display boards from the command post.

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TOS ASSISTED TASK

ELEMENT: G4 Main

FUNCTION: Control

TASK: Recommends the main supply route based on the tactical and administrative situation, the area of operations, and the enemy situation.

FREQUENCY ESTIMATE: Every operation order and subsequent frag orders

CRITICALITY: 2

DUTY POSITION: G4, Assistant G4

INPUTS

- Operations plan
- Terrain features
- Unit locations
- Route reconnaissance information
- Road net information

COORDINATION

- Provost marshal for MSR security
- G3 for tactical situation plans
- G2 for terrain and road net information
- Engineers for route reconnaissance information

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Graphics
- Data transfer
- File update

PROCEDURES

- TOS assisted - The assistant G4 will access the TOS data base to obtain data needed for determining the MSR. Files accessed would include TER, BIR, UOR, and TD.
- TOS assisted - The assistant G4 will initiate interactive graphics to develop the projected MSR to support mission requirements.

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- TOS assisted - The assistant G4 will access and set the appropriate display category selection criteria for displaying the projected MSR on the TOS large screen display.
- TOS assisted - The MSR will be displayed on the large screen graphics display and coordinated with the G3.
- TOS assisted - The MSR will be modified as required by the G3 and G4 coordination and stored in the G4 staff working file for future reference.

OUTPUTS

The output of this task is the MSR to support the mission requirements identified in the division operations order.

NOTES

- The development of frag orders to update the operations order, such as the MSR overlay and annex K to the operations order, could use essentially the same procedures.
- This task is TOS assisted because the information needed to determine the MSR is readily available in the TOS data base, the large screen graphics display facilitates its coordination, and it can be communicated to the units more rapidly using TOS.

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TOS ASSISTED TASK

ELEMENT: G4 Main

FUNCTION: Control

TASK: Recommends location of the division rear boundary based on the tactical and administrative situation and the location of adjacent unit rear boundaries.

FREQUENCY ESTIMATE: Depends on the tactical situation

CRITICALITY: 3

DUTY POSITION: G4, Assistant G4

INPUTS

- Operations plan
- Boundaries of adjacent divisions
- Terrain features
- Unit locations

COORDINATION

- G3 to insure logistical support installation locations suitable for the tactical operations
- Chief of staff for approval of the recommended boundaries
- Corps G3 to incorporate the new boundary at corps
- DISCOM to insure that support can be provided within the boundary
- G4 of adjacent units to see that established boundaries are not in conflict

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Graphics
- Data transfer
- File update

PROCEDURES

- TOS assisted - The assistant G4 at the main command post will access the tactical dispositions file to obtain the current division boundaries.
- TOS assisted - The assistant G4 will determine and set display category selection criteria.
- TOS assisted - The assistant G4 will initiate TOS graphics, delete the existing division rear boundary display, and construct a new one.

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- TOS assisted - The assistant G4 will access and display the recommended rear boundary on the large screen graphics for coordination with the G3 and approval of the chief of staff. Modifications are made as required.
- TOS assisted - The G3 will store the approved rear boundary line in the tactical dispositions file.

OUTPUTS

The output of this task is a new division rear boundary that coincides with the tactical situation. Upon completion, the new boundary is sent to corps for review and incorporation in corps boundaries.

NOTES

The G4 or the assistant G4 at the main command post generates the boundary, but the G3 will be responsible for loading the new boundary data in the tactical dispositions file.

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PERSONNEL

TABLE 24.
G4 Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
G4	05	2625	1	05	2625	1
Assistant G4	04	4010	2*	04	4010	2*
Food service technician	W1	041A0	1	W1	041A0	1
Clerk typist	E4	71B30	2	E4	71B30	2
Light vehicle driver	E3	11B10	1	E3	11B10	1
Total Officers/Enlisted Men			3/4			3/4

*One of the two assistant G4s will be assigned to the tactical command post.
All other personnel are located in the main command post.

The division G4 section deploys personnel to the division main command post, the division tactical command post, and the division support area. Division support area activities were not investigated and the G4 element at the division support area is not included in the above table. Manning for two shifts at the main command post and the need to keep them as small as practical are requirements. The doctrinal and TOS recommended manning for the G4 element are the same.

The G4 himself supervises and is responsible for the G4 element. He may travel within the division to look into logistical matters. The assistant G4 at the main command post will become the officer-in-charge of the G4 element during those periods when the G4 himself is absent. The G4 himself will make the logistical recommendations and decisions and present the logistical briefings to the chief of staff and the commander. The assistant G4 at the main command post will prepare the logistical briefings, coordinate with the assistant G4 at the tactical command post on logistical problems of an immediate nature, and maintain logistical status information. The assistant G4 at the tactical command post is needed to monitor the tactical situation and learn of logistical problems affecting the tactical situation at the earliest possible moment. He will communicate these problems to the G4 or the assistant G4 at the main command post and work with them in coordinating solutions to these logistical problems.

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The food service technician will be responsible for maintaining Class 1 (i.e., rations) status information and working to solve any problems associated with food. It is not expected that 24-hour manning will be required for this position and that one properly trained person will be able to meet the associated responsibilities. This position is not affected by TOS and his duties are not described as part of the preceding G4 element description.

The clerk typist will type the operations annexes, frag orders, and requisitions, and assist with the voice and written communications of the G4 element at the main command post. These activities are of an ongoing nature and it is recommended that two clerk typists be provided to make possible required 24-hour coverage.

One light vehicle driver is required to drive the G4 to the places he must visit in addressing logistics needs. When he is at the main command post, the light vehicle driver will assist the clerk typist in maintaining status information and voice communications.

RECOMMENDATIONS

Develop a staff working file for logistical status information.

It is recommended that G4 element personnel develop a staff working file containing depot locations and the critical supplies and quantities stocked at each depot. Such a file would assist G4 personnel in responding to logistical problems of an immediate nature and be useful in anticipating and planning to meet logistical needs. The TOS system has the capability to satisfy this recommendation.

Develop software to calculate movement tables.

The G4 element computes movement tables. A movement algorithm should be developed that uses data from the tactical dispositions and terrain files in generating road movement tables, strip maps, and other movement information required by the G4 and G3. Such an algorithm could be useful for preparing troop movements, MSRs, routes and times between units and supply points, routes and times between depots and supply points, and movements of the entire division.

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TOS DIVISION COMPUTER CENTER SECTION

GENERAL

The TOS division computer center (DCC) is located at the division main command post and is under the supervision of the ADP system controller (SC). The DCC provides for maintenance of the data base, numerical calculations, filtering and correlation of information, generation of responses to queries, automated dissemination functions, and support of the required processes and algorithms. The DCC accepts messages from and relays and transmits messages to TOS users and interoperating systems. System security and continuity of operations will be in accordance with the ACCIS Surety Handbook.

MISSION

The mission of the DCC is to maintain the overall effectiveness of the TOS operation.

OVERVIEW OF TOS OPERATIONS

The TOS computer center section will operate in the division computer center of the division tactical operations center. The section will use the computer and its peripheral equipment to initiate and conduct TOS computer operations in support of division tactical operations. The section has the overall responsibility for computer center installation and displacement, computer system configuration, and maintenance of the overall effectiveness of TOS computer operations.

The SC and his staff will be responsible for preparing the system for relocation and the execution of shutdown procedures will be at the direct order of the SC. Disassembling and reassembling the computer center at a new location requires an assortment of manual and TOS assisted tasks. The principal manual tasks and those related to preparing and moving the equipment, securing the equipment in position at the new location, and physically connecting power and communications with the DCC. The SC will also be responsible for selecting the location site for the DCC and its peripheral gear within the division tactical operations center. Once power is applied to the system, the SC and his staff will use the operating system to initialize the computer and perform system checks to ensure a good operating system. Coordination with the data base managers will establish the current requirement for system subscribers and their status, including console assignments, originator codes, file sizes, and file access keys. The SC will determine when the DCC is ready to accept subscribers and will issue the order to transmit the "on the air" message.

Maintaining the overall operating effectiveness of TOS is the second major function of the SC and his staff. The SC will ensure that an adequately

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trained number of staff personnel are assigned to conduct DCC operations. These personnel will come under the direct control of the SC and adhere to all security matters and practices initiated by him for the DCC section. They will conduct all computer system fault detection and fault isolation routines for all programmed and emergency maintenance periods. They will monitor all system maintenance panels, control units, and displays, and report any problems detected to the SC to ensure a current operational estimate of the system status and capability. The SC and TOS supervisor will constantly coordinate with the data base and file managers to ensure that the operational requirements of the system are being satisfied. They will dynamically reconfigure the system as the need arises, reallocate file space to meet emergency requirements, prevent unauthorized access to the system, and attempt to adapt the system to the needs of the users. The SC will have the authority to declare the system non-operational, instituting emergency maintenance and continuity of operations procedures.

FUNCTIONS AND TASKS

Functions and tasks performed by the DCC element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 25.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 25.
TOS Division Computer Center Section Positions, Functions, and

FUNCTIONS AND TASKS	ADP System Controller	ADP System Controller
Establishes the TOS system configuration.		
Determines the location for the DCC, positions and secures DCC vehicles and equipment, connects power and communications cables in the DCC, and grounds DCC vehicles and equipment.	X	
Powers up and initializes the system, conducts system checks, and transmits "on the air" messages.	(X)	
Maintains the overall effectiveness of TOS operations.		
Maintains off-line data storage.	(X)	
Monitors TOS computer system operations.	(X)	
Coordinates user requirements with data base and file managers.	(X)	
Maintains security for TOS data base and DCC computer tapes, disc packs, and classified printed materials.	(X)	
Schedules and implements computer system maintenance and recovery.	(X)	
Supervises DCC personnel.	X	
Coordinates DCC shutdown and displacement.	(X)	

X - Manual Task

(X) - TOS Assisted Task

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, and
and Tasks

Assistant System ADP Controller	TOS Supervisor (NCOIC)	Senior DCC Operator	DCC Operator
---------------------------------------	------------------------------	---------------------------	-----------------

X	X	X	X
(X)	(X)	(X)	(X)
(X)	(X)	(X)	
(X)	(X)	(X)	(X)
(X)	(X)		
(X)	(X)	X	X
(X)	(X)	(X)	(X)
X	X		
(X)	(X)	(X)	X

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MANUAL TASK

ELEMENT: DCC

FUNCTION: Establishes the TOS system configuration.

TASK: Determines the location for the DCC, positions and secures DCC vehicles and equipment, connects power and communications cables in the DCC, and grounds DCC vehicles and equipment.

FREQUENCY ESTIMATE: Each move of the main command post

CRITICALITY: 1

DUTY POSITION: SC, Assistant SC, TOS Supervisor, Senior DCC Operator (DCCO),
DCC Operator

INPUTS

- Main command post location
- G3 and DCC representative provides physical configuration required for the main command post and the DCC.

OUTPUTS

- Placement of computer and mass memory shelters and equipment to facilitate interconnecting of equipment and terminals and setting up the communications antenna
- Interconnected, secures, and grounded DCC components

COORDINATION

- Chief of Staff
- G3
- Siting party

NOTES

- During displacement operations, the TOS supervisor will ensure that all computer center switch settings and circuit level considerations are in accordance with standing operating procedures.
- The off duty SC or TOS supervisor will accompany the siting party and be responsible for selecting and planning the DCC location within the area established for the division tactical operations center. Location selection considerations include:
 - Location for erecting the radio antenna

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Computer shelter and memory shelter vans can be located within 100' of each other.

Generators can be physically located within 100 meters of the computer and memory shelters.

Display subsystem can be located within 100 meters of the computer shelter. The area lends itself to camouflaging.

- When the system arrives, the TOS supervisor will direct the DCC operators in positioning and securing the DCC vehicles and equipment, connecting power and communications cables, and grounding the DCC vehicles and equipment.

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TOS ASSISTED TASK

ELEMENT: DCC

FUNCTION: Establishes the TOS system configuration.

TASK: Powers up and initializes the system, conducts system checks, and transmits "on the air" messages.

FREQUENCY ESTIMATE: Each move of the main command post and each time the system goes down

CRITICALITY: 1

DUTY POSITION: SC, Assistant SC, TOS Supervisor, Senior DCC Operator, DCC Operator, System Subscribers

INPUTS

- Confirmation that the physical system of TOS equipment is in place, interconnected, and grounded
- Notification of terminal access authorization and file managers

COORDINATION

- Input: system subscribers, file managers
- Output: system subscribers, file managers, chief of staff

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- Data base access
- Data base update
- Data transfer
- Graphics

PROCEDURES

- Manual - The senior DCCO and DCCO will power up the system and adjust the memory and computer shelters.
- TOS assisted - The senior DCCO will initialize the system using the listed salvage point recording. If failures occur, troubleshooting routines should be instituted and the system corrected. The "on the air" message should not be transmitted at this time.
- TOS assisted - The senior DCCO should coordinate with the SC to ensure that subscribers and their status, including terminal assignments, originator codes, and access keys, are properly defined.

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- TOS assisted - The SC should coordinate with the data base managers to determine if changes to consoles, originator codes, or access keys are required. If changes are required, the SC will access the system and adjust the master configuration tables and access keys by inserting the appropriate system messages. He should coordinate with the DCCO to ascertain that the system is configured correctly.
- TOS assisted - The DCCO should install the required FM radio antennas and hookup the required cables provided by the signal battalion. He should activate the communications control unit and establish voice contact with users at remote input devices. Signal personnel and the SC should be notified when circuits are not working.
- TOS assisted - Prior to sending the "on the air" message, the senior DCCO must ensure that the configuration specified by the SC is indicated in system displays and that this configuration has been confirmed.
- TOS assisted - The SC or TOS supervisor will transmit the "on the air" message.

OUTPUTS

The output of this task is the initialization and checkout of the computer software system. Originator codes and access keys will be stored, verified, and tested to insure proper operator access to the system. All voice and digital communication with subscribers will also be checked as part of the system verification program. The task will culminate with the transmission of the "on the air" message indicating to all subscribers that the system is operationally ready.

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TOS ASSISTED TASK

ELEMENT: DCC

FUNCTION: Maintains the overall effectiveness of TOS operations.

TASK: Maintains off-line data storage.

FREQUENCY ESTIMATE: As required

CRITICALITY: 3

DUTY POSITION: SC, Assistant SC, TOS Supervisor, Senior DCCO

INPUTS

- Standing operating procedures for log tape and salvage point recording
- Standing operating procedures for storing tapes and discs
- Situation requiring off-line storage of data

COORDINATION

- Chief of Staff
- G3
- Data base managers
- File managers

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- Data base update
- Data base access
- Data transfer

PROCEDURES

- During the initial system load, the operating system and all of the applications programs are written in the random access memory. The remaining file space is allocated to the user data base and divided into regions by the file management program routines. File management routines will notify the SC of the original size of the regions and the amount of space still available.
- SC will be notified by system triggered messages as user files and random access memory become saturated. The system will notify the SC as saturation of the random access memory reaches the level specified by standing operating procedures. If this saturation occurs, the SC should selectively

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delete records from the files and notify file managers to delete obsolete or irrelevant data from their files.

- When random access memory space is critical, the SC can reallocate random access memory space through an operating system file management routine. This will cause file sizes to be restructured to provide additional random access memory file space to users with requirements above the initial allocation. This may also cause the initial allocation of some users to be reduced. User priorities should be established by standing operating procedures.

OUTPUTS

The output of this task is loading, monitoring, and adjustment of random access memory to maintain the overall effectiveness of TOS operations and to satisfy user requirements.

TOS ASSISTED TASK

ELEMENT: DCC

FUNCTION: Maintains the overall effectiveness of TOS operations.

TASK: Monitors TOS computer system operations.

FREQUENCY ESTIMATE: On-going

CRITICALITY: 3

DUTY POSITION: SC, Assistant SC, TOS Supervisor, Senior DCCO, DCCO

INPUTS

- Standing operating procedures
- System status messages
- Requests to change terminal assignments, communications assignments, file manager assignments, system configuration
- System fault indicators

COORDINATION

- Chief of Staff
- File managers
- System subscribers

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- Data base update
- Data base access
- Data transfer
- Attention device and threshold selection

PROCEDURES

- The SC and his staff will use their console to monitor system error messages, undetected source errors, and management errors. System error messages occur as an output when devices malfunction, established system thresholds are met, and specific hardware and software interfaces are violated. They include such things as memory access violation, illegal recipient request, system in throttle mode, originator code error, and file exceeds size threshold. System control messages are issued when necessary to notify the senior DCCO of a condition requiring his intervention.

- System responses to these problem indications will be handled by the SC and his staff in accordance with system manuals and standing operating procedures. The SC and his staff will be able to interface with the system to perform the overall monitoring functions:
 - Retrieve summary and statistical information on devices in terms of their location, serialization codes, and status
 - Monitor and change the status of system threshold parameters
 - Process information associated with access errors
 - Review device and channel error counter information
 - Access and interpret system configuration summaries
 - Process and interpret the status of peripheral support equipment such as generators, communications, and random access storage.
- System degradation can range from the loss of single items of equipment, which have a negligible effect on the system, to the loss of the entire computer center complex. Specific equipment outages as well as software errors can cause the loss of all or part of the operational data base. Action required for recovery can range from taking the failed unit off-line to a complete reconfiguration of the system involving all operators and users of the system. Whether the system is degraded or inoperable is determined by the SC. Inoperability forces staff users to revert to manual methods until the system is restored.

OUTPUT

- Summaries and messages on status of equipment and communications, threshold parameters, and system configuration
- Salvage point recordings and log tapes
- Data base modifications
- System configuration modifications
- System recovery and reconfiguration messages

NOTES

- Fault isolation programs cannot be run concurrently with operational programs.
- The output of the task is receiving, processing, and responding to system indicators which are established and controlled by the SC and his staff. Responses to problem indicators are handled by the SC and his staff in accordance with standing operating procedures, guidance from the chief of staff and user requirements.

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TOS ASSISTED TASK

ELEMENT: DCC

FUNCTION: Maintains the overall effectiveness of TOS operations.

TASK: Coordinates user requirements with data base and file managers.

FREQUENCY ESTIMATE: On-going

CRITICALITY: 3

DUTY POSITION: SC, Assistant SC, TOS Supervisor

INPUTS

- Data base and file manager designations
- File assignments and user authorizations
- File size and change authorizations
- File saturation thresholds

COORDINATION

- Chief of staff
- G2
- G3
- File managers

MAN/MACHINE REQUIREMENTS

- Menu selection
- Data base access
- Data base transfer
- Attention device and threshold selection

PROCEDURES

- The SC will coordinate with data base managers to determine changes to file managers and user authorities and authorizations. These will be updated by the SC using the appropriate system input message formats.
- The SC will be notified by system message when the user files and random access memory are approaching saturation. When this occurs, the SC can selectively initiate actions to delete records from the files. He should also notify the appropriate file managers to begin file deletion and purging operations to conserve space.
- The SC may also elect to restructure file sizes if necessary in accordance

with the file priorities which should be established by standing operating procedures. This will be accomplished by recalling the appropriate system format to specify data base status and file sizes.

OUTPUTS

The output of this task is the monitoring and control of the TOS data base to ensure user requirements are satisfied and that the overall effectiveness of the TOS system is maintained.

NOTES

- The SC is responsible for the entire TOS operation, including file management. While the SC has the capability to control user files, he delegates the authority for managing files to file managers who can best determine those items of information essential to the success of his mission. The SC will not restrict or expand file size or delete any record of a file without coordination with the file managers affected. All actions affecting a user file require great care as information lost from or damaged in a user file has serious implications.
- The G2 will be the ENSIT data base manager and the G3 will be the FRENSIT data base manager.
- File management responsibility for the files within their data bases may be assigned to one or more individuals in the respective section.
- TOS will keep the SC informed of file sizes and saturation levels and file managers will coordinate with the SC on file user problems.
- The file manager uses the file review process to inspect any record as it is entering the data base. The SC is notified by automatically generated messages in accordance with established thresholds when user files and random access memory are becoming saturated. He may selectively delete records from the file using proper user delete messages or he may notify the file manager who will delete records from the file which is approaching saturation. In either event, the SC will coordinate the decision with the affected file manager.

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TOS ASSISTED TASK

ELEMENT: DCC

FUNCTION: Maintains the overall effectiveness of TOS operation.

TASK: Maintains security for TOS data base and DCC computer tapes, disc packs, and classified printed materials.

FREQUENCY ESTIMATE: On-going

CRITICALITY: 2

DUTY POSITION: SC, Assistant SC, TOS Supervisor, Senior DCCO, DCCO

INPUTS

- Standing operating procedures governing marking, control, storage, and destruction of classified printed materials, computer tapes, and computer disc packs
- Standing operating procedures governing system software security
- Directives on file management and data storage and access
- Operations and fragmentary orders affecting system configuration

COORDINATION

- Security officer
- Data base managers
- System subscribers

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- Data base update
- Data base access
- Data transfer

PROCEDURES

- Manual - The SC should ensure that all TOS consoles are physically secure and are located in the TOC area they serve.
- TOS assisted - The SC must ensure that all TOS users are familiar with TOS classification codes and that they are applied to input and output messages. Close coordination should occur with the security officer, data base managers and staff officers responsible for standing operating procedures.

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- Manual - The SC should also ensure that appropriate internal procedures are developed for classifying, controlling, and storing computer system printouts, log tapes, salvage point recording tapes, and disc packs.
- TOS assisted and Manual - The SC should ensure that his staff adheres to all communications security procedures and standing operating procedures published by the division.
- TOS assisted - The SC should establish thresholds for detecting illegal attempts to access the data base by undefined users. System error messages generated when these thresholds are reached must be observed and responded to if necessary.
- TOS assisted - The SC should establish appropriate methods to identify and correct unauthorized uses of the TOS consoles.
- TOS assisted - The SC should monitor equipment outputs to detect attempts to gain access to the system by users of illegal or captured consoles.

OUTPUTS

The output of this task is the overall maintenance of software security and the proper classification of all computer tapes, discs, and printed materials.

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TOS ASSISTED TASK

ELEMENT: DCC

FUNCTION: Maintains the overall effectiveness of TOS operations.

TASK: Schedules and implements computer system maintenance and recovery.

FREQUENCY ESTIMATE: As required

CRITICALITY: 2

DUTY POSITION: SC, Assistant SC, TOS Supervisor, Senior DCCO, DCCO

INPUTS

- Standing operating procedures or other authorization for computer system maintenance
- Computer error message report
- Standing operating procedures for computer maintenance

COORDINATION

- Inputs:
- Chief of Staff
 - G3
 - System subscribers
- Outputs:
- Maintenance depot
 - Direct support maintenance team
 - ADSO
 - System subscribers

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- Data base update
- Data base access
- Data transfer

PROCEDURES

- TOS assisted - The SC will initiate fault detection routine as appropriate during TOS operations to uncover system problems. He will also initiate those actions necessary to correct deficiencies without taking the system off the air.
- TOS assisted - SC coordinates the termination of computer service with data base managers and chief of staff. System subscribers are notified in advance of shut down. System DCCO shuts down and brings up the system.

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While the system is down, system subscribers:

Transmit time sensitive messages manually.

Log these messages in the journal to facilitate data base update when the system is up.

Defer routine traffic.

Update the data base when the system is up based on priority of input.

Resubmit unanswered queries and other messages for which an acknowledgement had not been received prior to notification that the system was down.

- TOS assisted - The TOS supervisor oversees the maintenance of the system and the senior DCCO detects faulty operation, performs troubleshooting with the maintenance and diagnostic programs, isolates and repairs faults, tests equipment, and verifies that the DCC is fully operational. The DCCO assists the senior DCCO in maintenance and repair activity, loads and uses computer programs to perform maintenance tasks, and performs preventive maintenance on the DCC components.

OUTPUTS

The output of this task is the scheduling and implementation of routine and emergency maintenance necessary to maintain the effectiveness of TOS operations

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MANUAL TASK

ELEMENT: DCC

FUNCTION: Maintains the overall effectiveness of TOS operations.

TASK: Supervises DCC personnel.

FREQUENCY ESTIMATE: On-going

CRITICALITY: 3

DUTY POSITION: SC, Assistant SC, TOS Supervisor

INPUTS

- Standing operating procedures
- Personnel assignments
- Problem areas in the DCC

OUTPUTS

- Regular assignments of duties and responsibilities
- Reaction assignments to solve problems
- Accomplishment of DCC operations and maintenance requirements

COORDINATION

- Chief of staff
- DCC NCOIC

NOTES

- The senior system controller will be responsible for developing basic crew structures, job descriptions, and operating the DCC. He will ensure that each crew member is thoroughly trained and indoctrinated in the assigned functions and tasks. Cross training in the other areas of DCC operations will be accomplished to the level possible.
- The SC will also ensure that appropriate DCC work related standing operating procedures are written and that each member of the crew is aware of his assigned responsibilities and coordinating instructions.

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TOS ASSISTED TASK

ELEMENT: DCC

F ON: Maintains the overall effectiveness of TOS operations.

TASK: Coordinates DCC shutdown and displacement.

FREQUENCY ESTIMATE: Each time the main command post moves

CRITICALITY: 1

DUTY POSITION: SC, Assistant SC, TOS Supervisor, Senior DCCO, DCCO

INPUTS

- Authorization to shut down and relocate
- Authorization to shut down because of system failure
- Standing operating procedures governing shutdown and displacement
- Notification of seriously degraded communications

COORDINATION

- Inputs: • Chief of staff
 • G3
- Outputs: • All system subscribers
 • Data base managers
 • File managers

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- Data base update
- Data base access
- Data transfer

PROCEDURES

- Manual - SC coordinates the termination of computer service with data base managers and chief of staff. System subscribers are notified in advance of shutdown.
- TOS assisted - System subscribers establish queries to develop manual file needed during displacement.
- TOS assisted - The senior DCCO makes salvage point recording and log tapes of the system. The SC implements continuity of operations in accordance with standing operating procedures. The DCCO sends the "system down" message to subscribers and shuts down the system.

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The TOS supervisor oversees the setup, checkout, and teardown of the DCC equipment.

The DCC de-energizes and disconnects DCC components and communications equipment and sets the computer controls for transit according to standing operating procedures. The SC takes the salvage point recording and log tape to the new DCC location.

OUTPUTS

The output of this task is the coordination and implementation of procedures necessary to shutdown and displace computer operations. Concurrent with this task will be the implementation of continuity of operations procedures required during relocation.

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PERSONNEL

TABLE 26.
Division Computer Center Manning

<u>Title</u>	<u>Grade</u>	<u>Number</u>
ADP System Controller	05	1
Assistant ADP System Controller	04	2
TOS Supervisor (NCOIC)	E7	2
Senior DCC Operator	E6	2
DCC Operator	E5	2
Total Officers/Enlisted Men		3/6

The above table depicts the recommended complement of personnel for manning the DCC for TOS in a two-shift, 24-hour tactical situation. This is a new section and no doctrinal manning exists for comparison. No MOS recommendations are made. The functions and tasks to be performed by the personnel in this section should be studied to determine if new MOSs are needed or if existing MOSs are logical choices for personnel assigned to these positions.

The DCC personnel are responsible for displacing and setting up the system, initializing the system, coordinating the initiation of system communications, and assuring operation and shutdown of the system. They will install the TOS software package which includes the definition of TOS devices, device security levels, user access keys, and specific user function.

The DCC personnel are supervised by the SC. It is recommended that the SC be comparable to the other assistant chiefs of staff in grade and report directly to the chief of staff to provide him authority commensurate with his responsibility for the overall effectiveness of TOS operations.

The SC will have a console for use in monitoring and controlling the operating system, accessing the data base, starting and stopping the system, and the status of the system. The SC will also be responsible for system security, including authorizing information access, determining operational system security status, and inserting system security parameters into the computing systems. He will monitor and alter TOS to provide the most effective system response to users. He will be required to visit locations of systems interfacing

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with TOS. The assistant SC will share the functions and tasks of the SC and replace him when he is absent from the DCC. The SC or an assistant SC should be readily accessible to TOS users at all times. It is recommended that there be one SC and two assistant SCs assigned to the DCC to meet the requirement of the 24-hour presence of an SC in the DCC.

The TOS supervisor (NCOIC) will assist the SC and his assistants in the performance of their tasks. In addition, he will supervise the other enlisted personnel assigned to the DCC. The performance of these duties requires his 24-hour presence in the DCC. It is recommended that two TOS supervisors be assigned to the DCC to permit one to be present in the DCC at all times.

The senior DCC operators will be responsible for the actual operation of the DCC, the initiating and shutting down of the system, detecting system faults, and performing operator maintenance and repair of DCC equipment. Since at least one senior DCC operator will be required in the DCC at all times to perform these tasks, it is recommended that two be assigned to the DCC to meet this requirement.

The DCC operators will cable up the DCC computer, communications, and power equipment; power up and remove power from the system; load the computer programs; record, store, and dispose of hard copy information in the DCC; perform operator maintenance and repair of DCC equipment; and operate the DCC communications equipment. The on-going nature of these tasks requires the presence of at least one DCC operator in the DCC at all times. It is recommended that the DCC operators be assigned to cover the two-shift operation requirement.

RECOMMENDATION

Establish procedures for console reconfiguration within the division tactical operations center.

A requirement will exist for the SC to reconfigure user console assignments in the event of inoperable equipment. This could be accomplished in a routine situation by referring to a reconfiguration matrix specified by standing operating procedures. With multiple outages, the problem can be aggravated to the point where user requirements exceed system capabilities. It is suggested that a user-oriented priority list be established for console assignments in a degraded condition. It is also suggested that a suitable backup position for the SC be established to cover the situation in which the DCC console is inoperable.

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G2 TACTICAL COMMAND POST ELEMENT

GENERAL

The G2 tactical command post element is supervised by an assistant G2. They operate within the division tactical command post which is used by the division commander to control the conduct of the current battle.

MISSION

The mission of the G2 tactical command post element is to provide combat intelligence of immediate interest to the commander and other elements within the tactical command post. The combat intelligence that is provided is primarily that which is useful in making current tactical decisions. The majority of this combat intelligence comes from sources outside the tactical command post although some analysis is expected to be performed by G2 tactical command post personnel.

OVERVIEW OF TOS OPERATIONS

Under the current TOS hardware configuration, the G2 element is assigned a dedicated TOS console within the tactical command post. However, it is expected that some minor use of this console will be made by the G1, G4, FSE, or ADA elements at the tactical command post when the G2 console is available. G2 tactical command post personnel will use the TOS console to receive combat information and intelligence in the form of TOS ESD, EOB, TER, and intelligence summary staff working file messages. They will use the TOS console to retrieve TOS graphics displays and digital data requested by the commander and other tactical command post elements. They also will use the TOS console to retrieve and manipulate TOS data as an aid in evaluating, analyzing, and interpreting combat information.

G2 personnel will receive ESD file messages that report combat information and intelligence of immediate interest to tactical command post personnel. The receipt of these messages will be based on queries and SRIs as well as voice coordination with the A&P element at the main command post to insure that information of current interest to the tactical command post is routed to the G2 element console. The dissemination of these messages within the tactical command post might be accomplished by transferring the messages to one or both of the other two consoles but manual dissemination and/or use of the large screen display device are more likely methods.

G2 tactical command post personnel will share a TOS large screen display device with the G3 tactical command post element. The G2 element will use their

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portion of the large screen to display current enemy unit locations or any other items of enemy information desired by the commander. They will coordinate their display requirements with A&P element personnel at the main command post who should be able to provide the basic display file or files. G2 tactical command post personnel might also use the large screen to graphically display appropriate incoming ESD messages as a means of rapidly disseminating important messages and to show their relationship to the current situation.

G2 tactical command post personnel will receive requests for intelligence information from the commander, G3, and other command post elements. They will attempt to retrieve this information from the TOS data base via queries and may enter TOS intelligence collection requirement messages if the required information has not been collected.

G2 tactical command post personnel will use TOS as an aid in analyzing and interpreting combat information whose interpretation is required immediately by the commander, G3, or other tactical command post personnel. G2 tactical command post analysts should have available to them the same TOS data and data manipulation capabilities as are available to A&P analysts at the main command post provided they are permitted the same access authorizations. They will enter queries to retrieve TOS data relevant to the analysis. They will establish SRIs and correlation requests to retrieve new relevant incoming messages. They might also build console graphics displays to help in the analysis. They might use ESD input messages to report some of their analysis results.

Some intelligence information will still come in over the intelligence radio net, radio teletype, and via courier. These data will be handled manually except that appropriate items might be temporarily displayed on the TOS large screen display device. With the exception of the large screen display, most of the coordination within the tactical command post should be accomplished verbally or using hardcopied or written messages. The small size of the tactical command post and the close proximity of the elements make these forms of communication the most efficient means. Also, the actual derivation of analysis conclusions will be done manually because TOS presently does not contain analysis routines to aid in this area. Any suggested updates G2 tactical command post personnel have to the EOB, TER, or intelligence summary staff working file will probably be passed verbally to the A&P element as it is felt that control of the content of these analysis product files should be in the hands of one element to avoid confusion and possible contradictions. Finally, TOS will not be involved in the G2 tactical command post element task of monitoring and controlling the voice traffic over the intelligence radio net.

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FUNCTIONS AND TASKS

Functions and tasks performed by the G2 element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 27.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 27.
G2 Tactical Command Post Element Positions, Functions,

FUNCTIONS AND TASKS	Assistant G2	Intelligence Sergeant	Intelligence Analyst
Manages the receipt and dissemination of combat information and intelligence.	(X)	(X)	(X)
Coordinates requests for intelligence of a current nature at the tactical command post.	(X)	(X)	(X)
Performs limited evaluation, analysis, and interpretation of information from all sources.	(X)	(X)	(X)
Acts as net control station for the division intelligence radio net.	X	X	
Performs the hookup, energizing, initialization, and checkout of the TOS console.			(X)

X - Manual Task

(X) - TOS Assisted Task

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as, and Tasks

Order of Battle Analyst	Personnel Carrier Driver	Intelligence Clerk	RATT Team Chief	RATT Operator
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(X)	X	X	X	X
-----	---	---	---	---

(X)	X	X		
-----	---	---	--	--

(X)	X	X		
-----	---	---	--	--

	X	X		
--	---	---	--	--

(X)	X	X		
-----	---	---	--	--

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TOS ASSISTED TASK

ELEMENT: G2 Tac

FUNCTION: Manages the receipt and dissemination of combat information and intelligence.

TASK: Manages the receipt and dissemination of combat information and intelligence.

FREQUENCY ESTIMATE: Unknown (see notes)

CRITICALITY: 2

DUTY POSITION: Assistant G2, Intelligence Sergeant, Intelligence Analyst, Order of Battle Analyst, Personnel Carrier Driver, Intelligence Clerk, RATT Team Chief, RATT Operator

INPUTS

- TOS ESD, EOB, TER, intelligence summary, and basic display files
- TOS relay messages
- Information picked up by monitoring the division intelligence FM radio net
- Intelligence reports received over the radio teletype (RATT)
- Intelligence reports and documents received via courier

COORDINATION

- Inputs:
- Any element or unit providing inputs to TOS files, transmitting over the intelligence net, or sending intelligence information to the command post via RATT or courier. This would include the intelligence elements at every echelon from battalion through corps although the primary interface will be with the A&P and G2 operations elements at the division main command post.
 - G3 tactical command post element to determine the proportionment of the large screen display area.

Outputs: Any element represented at the tactical command post. This would include the command group and elements of the G1, G3, G4, FSE, ADA, and TACP although the primary interface will be with the command group and G3 element.

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics

PROCEDURES

- Manual - G2 tactical command post personnel will determine the mission intelligence data requirements for the tactical command post. These requirements will be derived from the commander's preferences, the needs of the G3 and other tactical command post elements, the type of mission, and the analysis needs of G2 personnel. Specific data requirements will vary with the momentary situation. The basic intelligence requirements for a given division tactical command post should be eventually established as standing operating procedures.
- Manual - Based on the intelligence data requirements established above, G2 tactical command post personnel will determine what enemy situation data should be permanently displayed on the large screen display device. They will share this device with the G3 tactical command post element and thus must coordinate their display requirements with the G3. This should be done to assure that a uniform display grid reference is being used, to assure that their combined display requirements do not exceed the display capability of the device, and to avoid duplications and overlapping of display items.
- TOS assisted - G2 tactical command post personnel will confer with A&P personnel at the main command post to tell them which display items are needed. It is envisioned that A&P personnel will be able to transmit these display items directly to the tactical command post large screen display device. If not, G2 tactical command post personnel will query the display files and permanent files at the main command post to retrieve the necessary display items and establish SRIs to receive updates and additions as they occur. They will have to closely monitor the display and remove unnecessary items in order to stay within display capabilities.
- TOS assisted - G2 tactical command post personnel will establish SRIs to route messages to their console reporting information of interest to tactical command post personnel.
- TOS assisted - G2 tactical command post personnel will receive TOS messages either in response to their SRIs or as a result of having the message addressed to them. The majority of these messages will be ESD inputs describing current enemy activities but they also should receive all EOB file inputs and any TER file inputs that might affect current tactical decisions. They will also receive free text relay messages that do not fit any file format. If an intelligence summary staff working file is kept, they would periodically query the file to get the latest summary information. All TOS messages should be hardcopied so a copy can be kept as a journal and for later reference. The TOS message may be disseminated to other tactical command post elements by giving them a hardcopy of the message or by retransmitting the message to one or both of the other consoles. Probably the most efficient means of disseminating important messages will be to graphically display them on the large screen display, if possible, and call attention to the new display.
- Manual - Messages requiring immediate dissemination, such as severe weather warnings, will still be received over the intelligence radio net. These

will be hardcopied onto spot report forms, logged in a journal, and disseminated to other tactical command post elements if appropriate. Larger intelligence reports and documents such as the OPORD intelligence annex, CI agent reports, IPW interrogation reports, patrol reports, and intelligence documents will come in over the RATT or arrive via courier. They will be logged in and analyzed by G2 personnel and shown to other tactical command post elements if appropriate.

OUTPUTS

The outputs of this task are TOS SRIs and the responses to those SRIs, TOS graphics displays, hardcopied TOS messages, and retransmitted TOS messages. Also output are spot reports copied over the intelligence net and disseminated as appropriate and updates to the G2 journal.

NOTES

- Data were not available on which to base a frequency estimate for a tactical command post operating in the doctrinal mode of providing command and control of the immediate battle situation. The investigated division's tactical command post was used as an alternate command post and they attempted to copy all intelligence net traffic when not in command. Under TOS and under the doctrinal use of the tactical command post, intelligence inputs to the command post should be limited to those that could affect the commander's decisions concerning the immediate battle situation.
- The basic G2 large screen display items should probably be limited to the current location of enemy units and the enemy front line trace. Other events would be temporarily displayed as required. G2 tactical command post personnel would probably want to receive all EOB file messages. Their ESD file requirements will vary with the situation. TER file requirements would probably be limited to trafficability data of momentary interest. Anticipated limited storage capabilities of the TOS terminal control unit should make it impossible to permanently retain portions of these files locally.
- Experiments conducted during test 222 of the TOS prototype suggest that the terminal control unit could operate in transit when the tactical command post is relocating. However, if TOS communications are lost during a move or at any time, then the system controller at the main command post should be requested to hold all inputs for tactical command post consoles in queues until communications are reestablished and updating from the queues can be accomplished. When the main command post moves and the central processor is down, tactical command post personnel might be able to maintain some TOS interface with brigades via their terminal control unit but most interactions would probably have to revert to manual methods involving the alternate command post until such time as the main command post returns to operation.

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TOS ASSISTED TASK

ELEMENT: G2 Tac

FUNCTION: Coordinates requests for intelligence of a current nature at the tactical command post.

TASK: Coordinates requests for intelligence of a current nature at the tactical command post.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 2

DUTY POSITION: Assistant G2, Intelligence Sergeant, Intelligence Analyst, Order of Battle Analyst, Personnel Carrier Driver, Intelligence Clerk

INPUTS

- Verbal request for intelligence information from any tactical command post element but most requests will come from the command group or the G3
- Large screen display. Most questions are formulated while studying the display.
- TOS ESD, EOB, TER, and intelligence summary files

COORDINATION

Inputs:

- Any tactical command post element requesting information
- Answers to requests might be obtained through any G2 element at the main command post or through brigade S2s

Outputs: Any tactical command post element

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- Data transfer
- Graphics
- File update

PROCEDURES

- Manual - The commander, G3, and G2 officers will have frequent discussions of the current situation using the large screen display of friendly and enemy situations as the basis for their discussions. Out of these discussions will come requests for additional intelligence data. Occasionally

the G1, G4, FSE, ADA, and TACP tactical command post representatives will also request additional information.

- Manual - G2 tactical command post personnel will attempt to answer these requests using the intelligence documents and any manual files maintained at the tactical command post.
- TOS assisted - If requests can not be fulfilled locally, G2 personnel will query the appropriate TOS file to obtain the information.
- Manual - If the query does not produce the information, then they may contact the element or unit that should have the information using non-TOS communications.
- TOS assisted - If the requested information is not available, G2 tactical command post personnel might enter a TOS ICR message to have the data collected. These messages go to CM&D personnel at the main command post who create TOS tasking messages sent to agencies capable of collecting the requested information. The agency collecting the information will send a TOS ESD message to the G2 tactical command post console reporting the results.
- TOS assisted - If the information is obtained through TOS, it might be shown to the requester on the G2 console, hardcopied for the requester, and/or displayed on the large screen display, if appropriate. Information received by non-TOS means will be distributed by non-TOS means unless it is suitable for graphics display on the large screen display.

OUTPUTS

The outputs of this task are TOS queries and ICR messages, the responses to these messages, and TOS graphics displays. Also output are non-TOS communications.

NOTES

Any particular request for information might also result in analysis being performed locally by the G2 tactical command post element to derive the requested information. The procedures involved in such analysis are described in the next task.

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TOS ASSISTED TASK

ELEMENT: G2 Tac

FUNCTION: Performs limited evaluation, analysis, and interpretation of information from all sources.

TASK: Performs limited evaluation, analysis, and interpretation of information from all sources.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 2 or 3

DUTY POSITION: Assistant G2, Intelligence Sergeant, Intelligence Analyst, Order of Battle Analyst, Personnel Carrier Driver, Intelligence Clerk

INPUTS

- TOS ESD messages received at the tactical command post
- Information from other TOS files used as analysis aids
- TOS large screen graphics displays
- Hardcopy of ESD and other TOS messages received earlier at the tactical command post
- Intelligence documents and reports such as spot reports, CI agent reports, patrol reports, and IPW interrogation reports received via non-TOS means
- G2 journal as an index to information received via non-TOS means

COORDINATION

Inputs: None. Use existing data.

Outputs: ● Any tactical command post element to whom the analyzed data would be useful. The primary tac recipients would be the command group and the G3 element.
● G2 operations and A&P element personnel at the main command post to past interpretations

MAN/MACHINE INTERFACE REQUIREMENTS

- Menu selection
- File access
- File update
- Data transfer
- Graphics

PROCEDURES

- TOS assisted - G2 personnel will receive ESD messages whose comparison and interpretation is of immediate interest to tactical command post elements. They also might receive requests for information from other tactical command post elements the answering of which is within the capabilities of, and can be performed quickly by, local G2 personnel.
- TOS assisted - The ESD file might be queried to retrieve other messages of the same event that could confirm and further explain the received ESD message. If none are available, an SRI might be established to route any future confirming messages to the G2 tactical command post console.
- TOS assisted - The ESD file might be queried to retrieve messages reporting related events that have occurred over some specific time frame. Additional relevant data might also be retrieved from the EOB, TER, and other files. SRIs and stored correlation queries might be established to route future related events to the console.
- Manual - Written intelligence documents and reports and hardcopy of past ESD messages that relate to the analysis might be studied.
- TOS assisted - TOS console graphics that show the spatial and time relationships between events might be created as analysis aids. These events might be taken from written reports as well as from TOS data.
- Manual - G2 tactical command post personnel will derive conclusions based on an analysis of the available TOS data and written reports. The conclusions would be passed verbally to any tactical command post element needing them.
- TOS assisted - G2 tactical command post personnel might input ESD messages that report their conclusions. These would be addressed to any element or unit to whom they might prove useful.
- Manual - If the G2 analysis results in recommended changes to the EOB, TER, or intelligence summary files, these recommendations would be reported to the A&P element at the main command post via non-TOS communications.
- TOS assisted - The analysis performed by G2 tactical command post personnel might result in the discovery of voids in our knowledge of the enemy. If so, they will input TOS ICR messages to the CM&D element that request collection of the missing information.

OUTPUTS

The outputs of this task are TOS queries, SRIs, correlation requests and ICRs; the responses to these requests; TOS graphics displays; and TOS ESD messages. Also output are verbal communications.

NOTES

- Analysts at the tactical command post will have the same data manipulation capabilities available to them as do the A&P analysts at the main command post, provided they are given the same data base authorizations. The

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difference between the two locations is that there will be a greater lag time in machine responses to tactical command post inputs. The amount and effect of this lag time is not presently certain.

- It is suggested that G2 tactical command post personnel not be permitted to directly update the EOB, TER, and intelligence summary files. These are analysis product files that must each be uniformly maintained by one set of individuals to avoid confusion and contradiction. G2 tactical command post personnel would pass their suggestions for these files to A&P personnel who would make the changes, if appropriate. It is also suggested that G2 tactical command post personnel not be permitted to delete or alter messages in the ESD file, other than their own. This could cause the loss of data that might be useful to A&P and other element personnel.
- It is difficult to estimate how much data analysis will be performed by G2 tactical command post personnel. It will probably depend on the A&P work load and the amount of uncommon analysis requests coming from the other tactical command post elements.

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MANUAL TASK

ELEMENT: G2 Tac

FUNCTION: Acts as net control station for the division intelligence radio net.

TASK: Acts as net control station for the division intelligence radio net.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 2

DUTY POSITION: Assistant G2, Intelligence Sergeant, Personnel Carrier Driver, Intelligence Clerk

INPUTS

All radio transmissions coming over the intelligence net

OUTPUTS

Directions to cease broadcasting unnecessary information

COORDINATION

Any station on the division intelligence radio net

NOTES

- The purpose of the net control station is to keep the broadcasting just to essential items.
- This task does not qualify for TOS interaction for obvious reasons.

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PERSONNEL

TABLE 28.
G2 Tactical Command Post Element Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
Assistant G2	04/03	35A	2	04/03	35A	2
Intelligence sergeant	E7	96B	1	E7	96B	1
Intelligence analyst	E5	96B	2	E5	96B	2
Order of battle analyst	E5/E4	96B	2	E5/E4	96B	2
Personnel carrier driver	E4	11B	1	E4	11B	1
Intelligence clerk	E3	71B	1	E3	71B	1
RATT team chief	E5	05F	1	E5	05F	1
RATT operator	E4	05F	<u>2</u>	E4	05F	<u>2</u>
Total Officers/Enlisted Men			2/10			2/10

This table depicts the manning a division might employ to sustain 24-hour operations in a tactically deployed manual element and the manning proposed for the element to sustain 24-hour operations using TOS. The recommendations do not provide for relief or replacement personnel.

The doctrinal manning for G2 tactical command post operations is taken from TC 101-5, Appendix A. No changes to this manning are currently envisioned under TOS. It might prove feasible, however, to eliminate two of the four analyst positions if it turns out that little actual analysis is performed at the tactical command post. Even if that situation occurs, full manning might be necessary to prepare for main command post moves because it appears that the tactical command post will have to revert to manual operations during this time under the current TOS configuration.

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A G2 12-hour shift will consist of from five to seven members. The difference between the two shifts will depend on which shift the intelligence sergeant and RATT team chief will work, which in turn should depend on the workload.

The Assistant G2 will be the officer-in-charge of a shift. He will direct the activities of other shift members and provide the interface with the commander, G3, and other tactical command post elements. It is not anticipated that he will actually operate the TOS console, but he must have sufficient knowledge of TOS to direct others to obtain TOS data for him and to use TOS to keep abreast of the current enemy situation.

The intelligence sergeant will supervise the moment-by-moment operations of the G2 tactical command post element. It is not anticipated that he will actually operate the TOS console but he must know TOS operations for the same reasons as the assistant G2.

It is recommended that the intelligence analysts and order of battle analysts be the TOS console operators. They will use the console to receive messages, retrieve data for analysis, build displays, and input messages. These positions will perform the bulk of the data manipulation and recording required for analysis. These analyst positions might also be required to operate the TOS large screen display device console or at least share this task with members of the G3 element.

The personnel carrier driver and intelligence clerk will man the division intelligence radio net and act as couriers within the tactical command post. They will not interact directly with TOS except in assisting in setting up the TOS equipment.

The RATT team chief and RATT operators will set up, operate, and maintain the radio teletype assigned to the G2 element. They will not interact directly with TOS.

RECOMMENDATIONS

None

G3 TACTICAL COMMAND POST ELEMENT

GENERAL

The G3 element at the tactical command post, is supervised by the assistant chief of staff for operations, G3. The G3 will normally be located at the tactical command post when not accompanying the commander. The tactical command post will be located well forward in the main battle area and should contain only those elements and information directly contributing to the conduct of the operations.

The G3 element, at the tactical command post is responsible for maintaining a current friendly situation and unit status, preparing and maintaining a current operations estimate, controlling the maneuvering forces, supervising preparation of fragmentary operations orders, supervising the execution of operations in compliance with the commanders concepts and decisions, recommending the allocations of additional resources and acting as the net control station (NCS) for the command/operations FM net.

MISSION

The mission of the G3 element is to be responsible for coordinating all tactical command post functions and to act as a focal point through which current operations information flows.

OVERVIEW OF TOS OPERATIONS

The G3 element will man one of the two analysis consoles located in the division tactical command post operations center. Element personnel will also man the corps and division command FM nets. The G3 element will use the TOS console to:

- Maintain a current friendly unit situation and status
- Maintain a current operations estimate
- Supervise fragmentary order preparation
- Supervise execution of operations using the commander's concepts and decisions
- Recommend allocation of additional resources and assets.

The console can also be utilized to insert, query, SRI, print, and display data from the TOS files which have a bearing on the tactical situation.

The G3 element will use the TOS console to extract current friendly situation data from the files to generate appropriate displays to describe the status and condition of major subordinate units. The officer-in-charge and the shift officer will also specify and generate other displays and staff working files

to assemble other data of interest to the commander. These data can then be stored and are available upon demand. This activity will be augmented by data processed through the division command FM net which qualifies as significant and is of interest to the division. This task qualifies for TOS assistance because its support to the mission was evaluated as one or two and it was estimated that during periods of heavy contact the system would be required to process and display in the vicinity of 40 tactical situation changes per hour.

The staff officer-in-charge and the shift officer will be able to use the TOS data base to assemble and present for the commander an overall operations estimate. A major input source for developing this estimate will be the battlefield information reports file. Battalions and brigades will input periodic reports which describe timely battlefield information required on the situation and the status of friendly battle elements. Critical situation reports as needed will be submitted to augment the routine reports. The report is intended to reflect the commander's estimate and will address such areas as the type of activity the unit is engaged in, the conflict intensity of the situation, the relative combat strength of the unit, the status of his supplies and communications, and the commander's personal overall assessment of his situation. An additional free text area of the report will allow him to embellish any particular portion of the report or to add items of interest such as NBC effects which are not currently part of the report format. These data might logically be augmented by significant events which are provided to the tactical command post by means of the command FM net and loaded into the data base by the operator. The data base can then be manipulated by the operator into displays and free text summaries necessary to complete the operations estimate required by the commander or standing operating procedures. Supportive courses of action can also be prepared and provided to the commander by the officer-in-charge and should include: the type of action, time the action will begin or be completed, location of the action, use of available means, and the purpose of the action. The task will be TOS assisted because it is an ongoing or reoccurring task, has a criticality of two which implies that if improperly done it could affect the mission, and because the TOS system and its files readily lend themselves to assembling and presenting this estimate.

The shift officer will be able to detect changing tactical requirements needed to support the maneuvering plan, task organization, fire support or engineering support by careful monitoring the corps and division command FM nets, direct telephone communications, TOS relay messages and situation displays. As the tactical requirements are identified, the officer-in-charge should assess each requirement in terms of its criticality and develop an appropriate course of action. Prior to presentation to the G3, they may be coordinated and discussed with the tactical command post staff and the G3 plans at main. Upon approval of a plan by the G3 or commander, the staff officer may generate the fragmentary order, modify the operations overlay or update the task organization file to implement the approved change. If the tactical command post is overloaded with

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critical problems, the administrative processing of the fragmentary order and files could be defaulted to the G3 plans officer at main. Because the task is estimated to reoccur at least two or three times per shift and can be assigned a criticality of one, it should be classified as TOS assisted.

The tactical command post will insure that operations are executed in accordance with the commander's concepts and decisions. These include but are not limited to keeping the commander posted on significant developments, reporting to higher headquarters, allocating additional resources, and issuing additional guidance or clarification to orders. Although TOS might impact each of these areas, keeping the commander posted on significant developments can be TOS assisted because the task is conducted twice daily and has a criticality of two. The commander can be apprised of all significant operations activities or events occurring in the division through the established briefing program conducted twice daily. The TOS large screen display capability could be used to support the commander's briefing program. The major G3 briefing areas include corps mission, division mission, covering force, division artillery operations, tactical air support, engineering, signal, and future operations. For each of these areas, staff officers can screen the data base for the appropriate briefing material. When obtained, these data can be formed into free text or display files to conduct the briefing. The officer-in-charge and shift officer should be expected to prepare the G3 portion of the briefing. They should also be expected to organize the overall briefing format using inputs from the other principal staff officers.

The G3 element at the tactical command post may also be expected to use the TOS console to query the data base for information relative to the tasks cited and others defined by the G3, SRI the data base for significant pieces of information required, update or delete information from a file for which they are responsible, develop and maintain display files required by the G3, and build staff working files necessary to conduct tactical operations. Operations staff personnel will also be expected to move the system when required, reinstall it, complete the communications hookup, power up the console, insert paper in the printer, perform system checkouts to insure a good working system, and perform malfunction reporting as required.

FUNCTIONS AND TASKS

Functions and tasks performed by the G3 tactical command post element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted is included as Figure 29.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

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TABLE 29.
G3 Tactical Command Post Element Positions, Functions, and

FUNCTIONS AND TASKS	Officer In Charge	Sh. Of
Maintains the current friendly situation and unit status.		
Receives and displays situation data from subordinate units.		
Recommends the assignment, attachment, or detachment of units, teams and detachments in accordance with situation requirements.		(X)
Maintains information on current status of significant barriers and obstacles.		
Prepares and maintains current operations estimates.	X	
Provides the maneuver portion and supervises preparation of fragmentary orders.		(X)
Supervises the execution of operations to insure compliance with the commanders concepts and decisions.		
Keep the commander appraised of significant developments.		(X)
Issues additional guidance or orders as required.	X	
Submits reports to higher or adjacent headquarters as necessary.	X	
Recommends allocation of additional resources if required.	X	
Plans and supervises the tactical command post security.	X	
Acts as NCS for the command/operations net FM.	X	
Performs the hookup, energizing, initialization, and checkout of the TOS console.		
X - Manual Task	(X)	- TOS Assisted Task

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and , and Tasks

Shift Off	Shift Officer	NCOIC	Journal Clerk	RTO
	(X)	(X)	X	X
		X		X
	(X)	(X)		X
	(X)	(X)	X	X
	(X)	(X)		X
	(X)			
	X			
	X			
		X	X	X
	X			
				X
		(X)		

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TCS ASSISTED TASK

ELEMENT: G3 Tac

FUNCTION: Maintains current friendly situation and unit status.

TASK: Receives and displays situation data from major subordinate units.

FREQUENCY ESTIMATE: Situation updates vary from 20 per hour in moderate contact to 40 per hour in heavy contact.

CRITICALITY: 1 or 2

DUTY POSITION: Shift Officer, NCOIC, Journal Clerk, RTO

INPUTS

This task is ongoing and requires the operations staff to maintain, store, and display data necessary to monitor the current tactical situation in the division. Inputs include but are not limited to:

- Friendly and enemy front line traces
- Boundaries
- Geographical references
- Command post locations
- Tactical maneuvering positions
- Chemical and nuclear strikes
- Minefields and barriers
- Significant events

Considerable data will be provided by lower echelons and available in the files. Tactical command post operations personnel in conjunction with the main should decide what data constitutes the best description of the division situation and how to display it.

COORDINATION

- Tactical command post officer-in-charge
- Main shift officer

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Graphics
- Data transfer

PROCEDURES

- Manual - The tactical command post shift officer should coordinate with the main shift officer to determine the files and criteria currently established to display the tactical situation at the main command post. By using the same display file for the basic division background, a common point of reference can be established for future coordination and overlaying of significant data for division.
- TOS assisted - The tactical command post shift officer would select and specify the appropriate category display criteria desired to display the data in the display file.
- TOS assisted - The SRIs established to update the displays for the main command post can also be applicable for maintaining a common division background reference at the tactical command post. The main shift officer should coordinate with the tactical command post shift officer and agree on the use of SRIs; the main shift officer will insure that the tactical and main command posts are on distribution for updates to the display files. This procedure and data sets should be spelled out by standing operating procedures.
- TOS assisted - The tactical command post shift officer has the option to specify by query and SRI any unique display item that is specifically required to support tactical command post operations. These could be retained in a separate display file for overlaying with the main display when required. Alarms and attention devices also need to be specified and set by the shift officer to notify operations when a significant event or value is attained.
- TOS assisted - When the administrative tasking has been accomplished, the tactical command post shift officer and NCOIC will monitor all system displays and printer outputs to determine changing system environment.
- Manual - Significant data provided by printer which is required in the journal will be handled by the NCOIC and journal clerk.
- TOS assisted - Data derived from the command FM net will be recorded by the RTO, entered in the journal by the journal clerk, and if determined to be significant by shift officer be processed into the operational summary staff working file by the NCOIC.
- TOS assisted - The tactical command post officer-in-charge and the shift officer should develop requirements for special display files required by the commander or G3. The NCOIC using graphics should create the display files using the specifications provided by the shift officer. These files should be annotated and referenced in the journal for recall.

OUTPUTS

The outputs of this task is the generation and updating of common display files for use in depicting the operational situation at the main and tactical command posts. The tactical command post can develop additional display files for its use in coordinating division operations.

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NOTES

- It is assumed that common displays, special displays for overlaying purposes, and exchange displays will be evolved in time and could eventually be specified by standing operating procedures.
- Significant events detected through the command FM net need to be inserted into operational summary staff working files. As a general rule, the headquarters processing the lower echelon event, main or tactical command post, should be charged with the responsibility for inserting the event in the files. To alleviate the need for added coordination, the command post inserting the event should include the other as an addressee. Severe events or incidents such as a nuclear or chemical event should be brought to the attention of the G3 and commander immediately.

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TOS ASSISTED TASK

ELEMENT: G3 Tac

FUNCTION: Maintains current friendly situation and unit status.

TASK: Recommends the assignment, attachment, or detachment of units, teams, and detachments in accordance with situation requirements.

FREQUENCY ESTIMATE: 3 or 4 times per day

CRITICALITY: 1 or 2

DUTY POSITION: Officer-in-charge, NCOIC, RTO

INPUTS

Inputs which might initiate this task include:

- Strengths of units
- Requirements of units
- Critical or assistance reports
- Contact with the enemy

COORDINATION

- G3
- Staff as required
- Main command post

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Data transfer

PROCEDURES

- Manual - The tactical command post officer-in-charge must identify and define the requirements or situation which will require a task organization change.
- Manual or TOS assisted - The officer-in-charge should query the task organization file to determine current organization and develop a strategy for changing the task organization to satisfy the newly defined requirement or situation.
- Manual - The officer-in-charge should coordinate with the plans officer at the main command post to discuss the requirement and proposed solution. The agreed solution should be submitted to the G3 for concurrence.

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- TOS assisted - If approved the officer-in-charge should access the task organization file and insert the changes in the file. Distribution should be made to all subscribers.

OUTPUTS

The output of this task is a task organization change developed at the tactical command post because of a tactical requirement. Coordination with the main command post should be accomplished before implementation. Distribution of the change would include all holders, higher and lower, of the basic division operations order.

NOTES

- Commitment of division reserve forces would have to be passed to corps. If all division assets are committed and support is still required, the commander must make the decision to go to corps.
- Task organization changes of a routine nature can be routed through the TOS system using an immediate precedence. Critical change need to be passed first on the G3 command FM net and reinforced by TOS message using the flash precedence.
- The task procedural description states that the officer-in-charge should insert the task organization change at the tactical command post. This is the simplest solution but the G3 main plans officer could insert the necessary changes after coordination with the tactical command post if more position control over the file is required. Coordination is assumed to be accomplished by voice.
- The task organization file planning capability is available and can assist in performing this task.

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TOS ASSISTED TASK

ELEMENT: G3 Tac

FUNCTION: Maintains current friendly situation and unit status.

TASK: Maintains information on current status of significant barriers and obstacles.

FREQUENCY ESTIMATE: 1 or 2 times per operation

CRITICALITY: 2 or 3

DUTY POSITION: Shift Officer, NCOIC, RTO

INPUTS

Lower echelons will initiate support requests of two varieties to the engineer:

- Changes or additions to the original barrier annex
- Request support to construct or undo barriers and obstacles to support maneuvering units

COORDINATION

- Assistant division engineer and G3 will have to coordinate and develop responses to the lower echelon requests
- Main shift officer
- G1 and G4 may be required for support and coordination

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Graphics
- Data transfer

PROCEDURES

- TOS assisted - The assistant division engineer is responsible for generating the barriers and obstacles annex of the operations order. Presumably he will insert in the terrain file those data items relevant and necessary to support operational requirements. These might include but are not limited to minefields, river crossings, tactical routes, obstacles and barriers, avenues of approach and atomic demolitions. These data may then be used by the staff officers for their specific planning purposes.

- TOS assisted - The shift officer should use the data from the terrain file to create display files which can be overlaid over the operational situation display for division and decision making for tactical situation.
- TOS assisted - The shift officer will establish SRIs against changes made to the terrain file in the specific areas of interest. This monitoring action would allow operations to keep abreast of engineer actions as they are completed to support the operation.
- TOS assisted - Specific brigade requests to alter plans in the operations order annex would be directed by relay messages to G3 plans at main, assistant division engineer, and for information to the tactical command post. G3 plans and assistant division engineer would discuss change and brief the G3 at the tactical command post for approval. If approved, G3 plans at the main command post would draft the fragmentary order in a unit operations report file and transmit to all holders of the basic operations order. Assistant division engineer would assess the terrain file and update it accordingly. The tactical command post shift officer would detect the change by SRI.
- TOS assisted - The shift officer upon receiving an update to the terrain file would determine if it impacted upon his terrain display file. If a change was required, he or the NCOIC could recall the display.
- TOS assisted - Brigade requests for additional engineering support should be transmitted by relay message to the engineer describing the requirement. Critical requests could be transmitted by the command FM net. Presumably the engineer will provide the support requested if possible or go to corps if required. Appropriate changes to terrain file would be made by the assistant division engineer. The shift officer could detect by SRI and react accordingly.

OUTPUTS

The output of this task is the processing and file updating generated by a brigade request for engineering support. Basic processing will be performed at the main command post, however, decision making if required will be provided by the G3 at the tactical command post. The shift officer will use the SRI and graphics capability of TOS to maintain and portray engineering support provided to the maneuvering forces.

NOTES

- Completion of barrier accomplishments can be reported by assistant division engineer and should also be reflected in the files.
- Division could be tasked by corps to conduct barrier work. This activity would be coordinated and reported completed through the G3 at the tactical command post.

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- When the requirements for engineer efforts exceeds the capabilities of the engineer support available, the division engineers will advise the G3. The engineer will recommend to the G3 what additional assets are required to accomplish the mission.
- Engineer support units employed on an adjacent or higher headquarters barrier system will affect direct coordination with the headquarters when approved by the G3.
- Division engineer will consolidate barrier plans of brigades into a division plan. It will be forwarded with the recommendations to the G3.
- G3 will approve materials and transportation requirements of brigades or battalions constructing barriers.

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TOS ASSISTED TASK

ELEMENT: G3 Tac

FUNCTION: Prepares and maintains current operations estimate.

TASK: Prepares and maintains current operations estimate.

FREQUENCY ESTIMATE: Days end or tactical situation

CRITICALITY: 2

DUTY POSITION: Officer-in-charge, Shift Officer, NCOIC, Journal Clerk, RTO

INPUTS

Significant events supported by higher or lower headquarters are used to assemble and support a current operations estimate. Events or situations occurring which affect the operations plan or endanger a unit are considered significant. These could include people, plans, or logistics.

COORDINATION

- G3
- Corps officer-in-charge
- Brigade S3
- Tactical command post staff

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Data transfer
- Graphics

PROCEDURES

- TOS assisted - The main command post shift officer will establish an operational summary staff working file to maintain and reflect all tactically significant events which have or are occurring within the division which could affect or support the division mission. This file should not be a substitute for the BIR file but an amplification of it or to cover areas affecting the operations order and other contingencies which may not be able to be documented in the BIR.

- TOS assisted - The officer-in-charge and the shift officer will review each battalion and brigade BIR forwarded to maintain an awareness of the unit situation. These data may be used to update displays or staff working files required to present the commander a status of forces. Queries should be established against the BIR file to obtain specified data of interest to the tactical command post. If a commander's outlook is reported as unclear, out of control, or beyond recovery, the shift officer should institute an immediate inquiry to determine the full extent of the situation and assistance required.
- TOS assisted - Significant event data that is reported by lower echelons on the division command FM net needs to be brought to the attention of the shift officer and NCOIC by the RTO for review and action. If determined to be a significant event the data should be inserted in the operations summary staff working file by the NCOIC by date/time/query, summary statement of the event, assistance required, and action taken. If appropriate, the officer-in-charge will develop a course of action for recommendation to the G3. The recommendation should translate what the command is to do to include the who, what, when, where, how, and why. Evaluating the event is the responsibility of the G3. The approved course of action will be implemented by the officer-in-charge using the guidance provided by the G3. Instructions will be issued verbally on the command FM net for critical situations.
- TOS assisted - Special events data provided by corps to the tactical command post also need to be summarized and inserted into the operations summary staff working file and distributed as required. This should be accomplished by the NCOIC as directed by the shift officer.
- TOS assisted - The sum total of the BIR, significant events, and display files provide ample information to establish a current operations estimate. If the commander requires a special format, the shift officer and NCOIC will have to query the files and organize the data into the free text format and/or displays required by the commander.

OUTPUTS

The output of this task is the identification and posting of significant and emergency events that are being conducted or occurring in the division. The command FM net, BIR, and operations summary staff working file are the major sources for finding this data. For events requiring it, courses of action will be planned, briefed, and implemented by the tactical command post staff and appropriately recorded. These data may be summarized and presented to the commander according to standing operating procedures or using his prescribed format.

NOTES

- The officer-in-charge at the tactical command post should direct and control the purging of the operations summary staff working file by the main. He should specify which events are to be printed, deleted, and inserted into the journal at main.

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- All significant milestones for an operation should also be noted and recorded in the operations summary staff working file by the tactical command post shift officer or NCOIC.
- It has been assumed that the commander or G3 will identify the key areas of operations that are to be monitored and represent the basic foundation for collection and response.
- Each course of action will have these elements:

Who - who is involved in the action

What - the type of action, defend or attack

When - time the action will begin or be completed

Where - location of action and duration of attack

How - use of available means, form of maneuver, and use of weapons

Why - purpose of action

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TOS ASSISTED TASK

ELEMENT: G3 Tac

FUNCTION: Provides maneuver portion and supervises preparation of fragmentary orders.

TASK: Provides maneuver portion and supervises preparation of fragmentary orders.

FREQUENCY ESTIMATE: 2 or 3 times a shift

CRITICALITY: 1 to 4

DUTY POSITION: Officer-in-charge, Shift Officer, NCOIC

INPUTS

- Unplanned maneuvering successes or failures
- Corps task organization changes
- Changes of fire priority or engineering support

COORDINATION

- Tactical command post staff
- G3 plans main command post

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- File update
- Graphics
- Data transfer

PROCEDURES

- TOS assisted - Operations order change requirements to the maneuvering plan, task organization, fire support, or engineering support are detected by the shift officer through the use of the division command FM net, relay message, direct call, display monitoring, and corps FM net. As detected, they are provided to the officer-in-charge for coordination.
- Manual - The officer-in-charge will address the more critical requirements first based upon his assessment of the situation. He will develop a course of action for presentation to the G3. Prior to presentation to the G3, the officer-in-charge may choose to discuss the proposal with the tactical command post staff and the G3 plans officer at the main command post. The G3 may approve, modify, or redirect the course of action for release. The G3 may also coordinate with the commander before approving.

- TOS assisted - The officer-in-charge will be required to access the unit operations report file to generate the frag order, the tactical dispositions planning file to alter the operations overlay or the task organization file to generate the appropriate change. In all cases, distribution of the change should be addressed to all holders of the operations order. Critical changes should be sent flash and more routine changes sent immediate precedence. Should the change be critical and for maneuvering units, some consideration may be given to passing the change by command FM net first followed by message.
- TOS assisted - The shift officer should access the appropriate file and alter it to support the frag order requirement. The NCOIC should prepare the warning order using the unit operations report free text format. After revision by the officer-in-charge, the NCOIC should add distribution and transmit.

OUTPUTS

The output of this task is a fragmentary order change to the operations order dictated by a tactical requirement. Preplanning and approval will be accomplished by the tactical command post, however, administrative implementation may be accomplished at either command post. Execution of the fragmentary orders by main would tend to reduce the workload at the tactical command post and permit more control over data base updating. Warning orders, if needed, could also be output as part of this task.

NOTES

- Changes in plans usually involve DIVARTY, engineers, or the maneuvering battalions.
- In an attempt to reduce the work at the tactical command post, planning could be conceived and approved at the tactical command post with administrative processing and implementation being performed by main.
- Operations order, task organization and operations overlay should be part of the tactical command post local data base storage. This task could then be continued without depending on the main computer.

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TOS ASSISTED TASK

ELEMENT: G3 Tac

FUNCTION: Supervises the execution of operations to insure compliance with the commander's concepts and decisions.

TASK: Keep the commander appraised of significant developments.

FREQUENCY ESTIMATE: 2 per day

CRITICALITY: 2

DUTY POSITION: G3, Officer-in-charge, Shift Officer

INPUTS

Significant operations activities or events occurring in the division. These data will have to be specified and processed by standing operating procedures and monitored within the applicable TOS files. Twice daily, these data will be organized and presented to the commander in a briefing.

COORDINATION

- Principal staff
- Special briefers
- Special staff

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Graphics
- Data transfer

PROCEDURES

- Manual - Each staff officer must prepare for his portion of the staff update. It is anticipated that briefing contents will be driven by standing operating procedures. A sample G3 outline might be as follows:

Corps mission, situation. Adjacent unit situation left to right
Division mission, task organization by display
Covering force: composition, disposition, strength, barriers, command relationship

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Division operations, since last briefing

- Left, center, right brigades - scheme, events, combat power, attachments and detachments
- Cavalry squadron
- Reserve
- NBC

Artillery: organization for combat, status

Tac air: allocated/used, preplanned/immediate, losses, current allocation

Engineer: bridging and barrier data - chart and overlay

Aviation

Signal

Future operations

- TOS assisted - Each staff officer will be expected to develop display files that can be used to highlight and explain briefing items for the commander. The G3 briefing will be prepared in advance by the officer-in-charge and shift officer.
- Manual - Each staff officer will provide the officer-in-charge with an outline of the briefing to include sequencing and location of display files. These will be organized into an overall briefing format and a scenario for the large screen display operation. Usual briefing sequence is G2, G3, G1, and G4.
- Manual and TOS assisted - The G3 is responsible for the overall conduct of the briefing and will ensure the commander's comments and guidance are noted and implemented at the conclusion of the briefing.

OUTPUTS

The output of this task is an operational update briefing for the commander using data assembled and stored by the staff sections. Data should be organized into display files and free text for use with the large screen display.

NOTES

- Tactical and main command post briefings usually occur at 0730 and 1700 hours. Morning briefing is normally held at main command post with only the principal staff. Evening briefings may also involve major subordinate commanders, brigade commanders, and separate battalion commanders.
- Briefing outline and data could be kept in a staff working file and kept up to date as the mission progresses. Each staff officer would always be in a position to brief the commander on the significant estimates in his area of interest. At the conclusion of each briefing, data presented should be printed and stored in the G3 operations journal.

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MANUAL TASK

ELEMENT: G3 Tac

FUNCTION: Supervises the execution of operations to insure compliance with the commander's concepts and decisions.

TASK: Issues additional guidance or orders as required.

FREQUENCY ESTIMATE: As required

CRITICALITY: 2

DUTY POSITION: Officer-in-charge, Shift Officer

INPUTS

- Brigade inquiries into the operations order or the fragmentary order
- TOS impact - Task will remain manual. TOS relay message should be used by the S3s to question or request clarification to the operations/fragmentary orders. The tactical and main command post officers-in-charge should be addressees

OUTPUTS

Clarification to questions relative to fragmentary order interpretation and tasking

COORDINATION

G3 may distribute questions/responses to other holders of the fragmentary order if appropriate

NOTES

- This task is normally performed after the fragmentary order is distributed and received by lower echelons.
- TOS impact - The relay message should be used to provide a response to the S3s request unless a change to the order is required for clarification. If a change is required, the plans officer at the main command post should draft the change using the UOR file, coordinate it and transmit it to all holders of the basic order.

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MANUAL TASK

ELEMENT: G3 Tac

FUNCTION: Supervises the execution of operations to insure compliance with the commander's concepts and decisions.

TASK: Submits reports to higher or adjacent headquarters as necessary.

FREQUENCY ESTIMATE: 12 per day

CRITICALITY: 4

DUTY POSITION: Officer-in-charge, Shift Officer

INPUTS

Required inputs to corps

OUTPUTS

Corps required reports. FORSTAT reports will not be submitted while the tactical command post is in control.

COORDINATION

With the staff as required

NOTES

TOS impact - Reporting is expected to be center-to-center in the TOS operational era. This will be the case if the query and SRI capability are provided in the final fielded system and if the data required is resident in the machine. Data not currently resident in the files could be stored in the staff working files but those files are subject only to query not SRI. Division reporting requirements for the total system need to be investigated to determine what center-to-center capability actually exists and what system conventions can be used to provide the remainder of the data as automatically as possible.

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MANUAL TASK

ELEMENT: G3 Tac

FUNCTION: Recommends allocation of additional resources if required.

TASK: Recommends allocation of additional resources if required.

FREQUENCY ESTIMATE: 1 per day

CRITICALITY: 1 or 2

DUTY POSITION: Officer-in-charge, NCOIC, Journal Clerk, RTO

INPUTS

Requests for immediate support are made via the G3 FM net. This task was envisioned as tactical requests as opposed to logistics or personnel support.

OUTPUTS

Approval, disapproval, or substitutes will be updated to the units by command FM net.

COORDINATION

- Air liaison officer
- G3 air
- FSE

NOTES

- Decision to provide support is based upon tactical knowledge and target priority.
- Artillery or aircraft may be freely substituted depending on range, location, ordnance availability (if enemy ADA is suppressing fighters, artillery will be substituted if possible).
- TOS impact - Tactical support requests are expected to be accomplished manually on the G3 command FM net. Task organization changes that might result from providing this support should be reflected in the system files. The shift officer may update the appropriate file or report to the officer-in-charge at the main command post for support in file administration.

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MANUAL TASK

ELEMENT: G3 Tac

FUNCTION: Recommends allocation of additional resources if required.

TASK: Critical support request.

FREQUENCY ESTIMATE: 1 per day

CRITICALITY: 1

DUTY POSITION: Officer-in-charge, NCOIC, Journal Clerk, RTO

INPUTS

If unit has no success in obtaining support and need becomes critical, the request will go direct to G3 for assistance. G3 command FM net is primary source for contact.

OUTPUTS

Approval or disapproval of request or forward to corps

COORDINATION

Discuss with the G3 the timeliness and other courses of action open (try to match assistance to the problem).

NOTES

- If the situation warrants and division assets cannot be made available, the decision will be made to go to corps. Corps will then make the final decision.
- TOS impact - If files are amended as a result of the action, they should be updated by the shift officer or the officer-in-charge of the main command post.

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MANUAL TASK

ELEMENT: G3 Tac

FUNCTION: Plans and supervises tactical command post security.

TASK: Plans and supervises tactical command post security.

FREQUENCY ESTIMATE: Unknown

CRITICALITY: Unknown

DUTY POSITION: Officer-in-charge, Shift Officer

INPUTS

- Physical security
- Central transmission security (SIGSEC)
- Radio silence

OUTPUTS

- Access roster
- Plans for radio silence

COORDINATION

Requirements for radio silence will be handled by the officer-in-charge and coordinated through all elements of the tactical command post.

NOTES

- Platoon of military police would provide for the security of the tactical command post itself.
- The company would provide overall security to include all protection and not just the tactical command post.
- G2 would maintain and provide the access roster to the military police.
- TOS impact - No change

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MANUAL TASK

ELEMENT: G3 Tac

FUNCTION: NCS for command/operations net (FM).

TASK: Command operations net.

FREQUENCY ESTIMATE: N/A

CRITICALITY: 1 or 2

DUTY POSITION: Officer-in-charge, RTO

INPUTS

Maintain radio telephone procedures and net security

OUTPUTS

Security and overall management of the command/operations FM net

COORDINATION

RTO will serve as monitor for the officer-in-charge

NOTES

- Net control status for division command FM secure only.
- G2 is the NCS for the intelligence net.
- TOS impact - No change

PERSONNEL

TABLE 30.
G3 Tactical Command Post Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
G3	05	54A	1	05	54A	1
Assistant G3	04	54A	2	04	54A	2
Operations sergeant	E9	11Z50	1	E9	11Z50	1
Assistant operations sergeant	E5	11B20	2	E5	11B20	2
Personnel carrier driver	E4	11B1W	1	E4	11B1W	1
Operations sergeant	E4	11B10	1	E4	11B10	1
Clerk typist	E4	71B20	1	E4	71B20	1
Radio teletype operator	E4	05E20	1	E4	05E20	1
Light vehicle driver	E3	11B10	<u>1</u>	E3	11B10	<u>1</u>
Total Officers/Enlisted Men			4/8			4/8

This table depicts the manning a division might employ doctrinally to sustain a 24-hour operation in a tactically deployed manual element, and the manning proposed for the element to sustain a 24-hour operations using TOS. The recommendations do not provide for relief or replacement personnel.

There appears to be no obvious reason to change the manning allocated for the G3 element operations at the tactical command post equipped with TOS. The two assistant G3's-04 can fulfill the responsibility and requirements described for the shift officer-in-charge. These officers fulfill the basic G3 element supervision responsibility and are the principal developers of the current situation and courses of action. The assistant G3-03 can fulfill the shift officer requirements and the operations sergeant E9 will operate as the shift NCOIC.

They will supervise the crew, prepare inputs for transmission by TOS or command FM net, issue warning orders, plan and develop display files, define and input staff working file data, direct the console operator and if required perform console operations required at the tactical command post. The two assistant

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operations sergeants can perform as the two required TOS console operators and interface with the shift officer or NCOIC for direction. The remaining enlisted personnel are required to support the operations journal requirements as specified by the officer-in-charge and to maintain the command FM nets with corps and division during the two shift operation.

RECOMMENDATIONS

Use the G3 element at main to perform tactical command post administrative tasks.

The tasks described for the operations element contain purely administrative tasks of generating orders, updating files, sending messages, and maintaining logs. By performing these tasks, the only available G3 console at the tactical command post is tied up in administrative actions instead of monitoring operations. The additional users also increase the probability of creating a file error. G3 main has the capability to perform each of these administrative tasks and is in a better position to monitor, control, and update division files. For these reasons, it is suggested that tactical command post concentrate on tactical monitoring and planning and allow the main command post to do all administrative processing of outputs and files.

Investigate the utility of TOS memory storage at the tactical command post.

The tactical command post must be able to operate from some limited self contained memory source while the main command post is relocating. To conduct the tasks described during main command post relocation the following mission files should be resident in the tactical command post: battlefield information report, tactical dispositions, task organization, and unit operations report. Intelligence file requirements should be stated in the G2 tactical section of this document. If the tactical command post storage capability cannot handle the suggested files, an examination of files versus computer tasks needs to be accomplished.

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TACTICAL COMMAND POST FIRE SUPPORT ELEMENT

GENERAL

The fire support element (FSE) is supervised by the division fire support coordinator located at division artillery. FSE personnel are located at the division tactical command post and provide the primary interface between the command post and division artillery.

The FSE tactical element represents the division artillery at the tactical command post and provides information on the status of field artillery support means, recommends field artillery task organization, advises on the most effective, and efficient employment of fires on surface targets and evaluates immediate requests for fire support. These functions are performed and coordinated with the assistant chief of staff for operations, G3.

MISSION

The FSE mission in the tactical command post is to coordinate the use of all immediate or near immediate fire support means for the division.

OVERVIEW OF TOS OPERATIONS

The FSE will share a TOS console on an as available basis with the G2 or G3. FSE personnel will utilize the console to:

- Maintain a continuous estimate of fire support situations and advise on employment of fires on surface targets
- Monitor current status of fire support units
- Evaluate and coordinate immediate requests for target information and fire support

TOS capabilities of data base access, graphics, and data transfer will be utilized to accomplish these basic requirements. The FSE will not, however, have access to a TACFIRE terminal for direct contact with DIVARTY.

The FSE personnel can utilize the situation displays, target files, vulnerability analyses, and staff working files established by the main command post FSE to monitor all tactical fire situations within the division. These files may be shared by having main command post include the tactical command post FSE on distribution for all files or file updates. The tactical command post FSE can also establish and implement prestored queries for the file data it desires. It is anticipated that some forced file distribution augmented by queries will ultimately be used to perform the task. The FSE will be hampered

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in performing the task because they will have console access only on an as available basis with G2 and G3. These file data when obtained will be used to advise the commander on all matters pertaining to fire support operations within the division. TOS support is provided because its also a TOS assisted task for the main command post FSE.

The FSE will use the TOS console to monitor all fire support unit status. This can be accomplished by prestored queries against the tactical dispositions, task organization, battlefield report, and unit operations report files or by reviewing main command post FSE files established for basically the same reason. File access and output again must be provided by either the G2 or G3 console operators.

The principal task of the tactical command post FSE is the evaluation and coordination of immediate fire support requests from maneuvering brigades and battalions. This task will be basically initiated by FM command net request and responded to in a similar manner thereby not qualifying for TOS support. Situational data developed through TOS, however, may provide the necessary background information for evaluating and developing a suitable solution to the problem.

FUNCTIONS AND TASKS

Functions and tasks performed by the FSE element are addressed in this section. A matrix of the tasks and duty position relationships, indicating which tasks will remain manual and which will be TOS assisted, is included as Table 31.

Following the table are task description forms, one for each task, stating whether the task is manual or TOS assisted and providing information about frequency estimate, criticality, duty position affected, inputs to the task, coordination requirements, and task outputs. For tasks which are TOS assisted, the man/machine interface requirements are listed and procedures for performing the task are discussed.

TABLE 31.
FSE Tactical Command Post Element Positions, Functions, and Tasks

FUNCTIONS AND TASKS	Shift Officer	Intelligence Sergeant	Operations Specialist
Advises the commander and staff on all current matters pertaining to fire support operations, status, and capabilities.	(X)	(X)	X
Maintains a continuous estimate of the fire support situation and advises on the most effective and efficient employment of fires on surface targets.	(X)	(X)	X
Remains current on the availability, location, and status of fire support units.	(X)	(X)	X
Evaluates immediate requests for fire support and target information with other tactical elements, division artillery, or corps FSE.	X	X	X
<hr/> X - Manual Task (X) - TOS Assisted			

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TOS ASSISTED TASK

ELEMENT: FSE tactical command post

FUNCTION: Advises the commander and staff on all current matters pertaining to fire support operations, status and capabilities.

TASK: Maintains a continuous estimate of fire support situations and advises on the most effective and efficient employment of fires on surface targets.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 1

DUTY POSITION: Shift Officer, Intelligence Sergeant, Operations Specialist

INPUTS

- Situation display summary
- Target list overlay
- Nuclear target analysis planning results
- Unit tactical disposition file
- Enemy situation data
- Task organization file

COORDINATION

- DIVARTY
- FSE shift officer, main command post
- G1, G2
- Corps

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Graphics
- Data transfer

PROCEDURES

- Manual - The tactical command post FSE shift officer should coordinate with FSE main command post to obtain the locations and names of all current FSE established files which describe the artillery estimate within the division. These would include but are not limited to: artillery situation display, current target list for the operations order, nuclear and chemical target

planning, vulnerability studies and strike warning messages or other significant events. It is anticipated that standing operating procedures would eventually describe how and what files will be shared.

- TOS assisted - The FSE shift officer could maintain his artillery situation estimate in one of two ways. First, he could be put on distribution for all files and files updates established by the main command post FSE. These updates would be used to manually assemble a display and log of all significant activities of interest to the tactical command post. Secondly, he could establish prestored queries to obtain the file data for display or print. The prestored queries would have to be coordinated with the console operators for insertion and activation as required. Console support will have to be provided by the G3 or G2 on an as available basis because the FSE is not assigned a console.
- TOS assisted - The FSE shift officer or intelligence sergeant would also be expected to access the data base for other required data to support planning, targeting, and briefings for the G3. Graphics may also be used by the FSE to depict the artillery situation on the large screen display. In either case, the FSE personnel must coordinate with G3 and G2 console operators for support on an as available basis.
- Manual - Immediate fire support requests received on the FM net will be processed by the shift officer and intelligence sergeant. Effective fire support planning and recommendations will be accomplished manually and coordinated with the G3. When approved, actions will be implemented by the FSE shift officer.

OUTPUT

The output of this task is the development and updating of the current fire support situation within the division. Development of the situation is anticipated to be combination of manual and TOS supported data.

NOTES

- The FSE shift officer's principal task will be to handle immediate fire support requests, planning and coordination with the G3. This task will continue to be conducted manually. TOS will primarily be used as a source of reference data to maintain an overall understanding of the artillery situation within the division. It is anticipated that the FSE shift officer will also want to maintain some manual reference to the fire support situation for use during main relocation.
- The FSE should not be expected to perform any file updating even during main relocation. This is predicated upon no access to TACFIRE and only random access to TOS. The FSE should, however, maintain a log of entries that occurred during the main command post relocation and update the main command post FSE when the relocation is completed.
- The shift officer will use the artillery situation data to:
Make estimates and evaluations of contingency and new missions being

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considered by the G3

Determine changes required in task organization

Accomplish target analysis and select weapons based upon weapon availability

Coordinate with AF on targeting and planning

Coordinate with corps on targeting beyond division capability

- The most critical task to be performed by the FSE during the main relocation is nuclear fire planning. The shift officer will be expected to perform this task manually using the previous developed fire plan as a point of reference. TACFIRE support is not anticipated to be available unless the tasking of TACFIRE can be accomplished by voice. Changes to the nuclear fire plan should be retained by the FSE and provided to the main command post when relocation is completed.

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TOS ASSISTED TASK

ELEMENT: FSE tactical command post

FUNCTION: Advises the commander and staff on all current matters pertaining to fire support operations status and capabilities.

TASK: Remains current on the availability, location, and status of fire support units.

FREQUENCY ESTIMATE: Ongoing

CRITICALITY: 1

DUTY POSITION: Shift Officer, Intelligence Sergeant, Operations Specialist

INPUTS

Fire unit, weapons status, and spot reports provide the basic input for this task. The majority of this data will ultimately be provided to TOS automatically by TACFIRE.

COORDINATION

- G3
- FSE main
- G2

MAN/MACHINE INTERFACE REQUIREMENTS

- File access
- Data transfer
- Graphics

PROCEDURES

- Manual - The FSE shift officer should contact the main command post FSE and identify all current files, titles, and locations. These files may then be recalled to obtain the status data required for this task.
- TOS assisted - The FSE shift officer also has the option to query and SRI the appropriate files to obtain the desired status data. File access could include the tactical dispositions, unit operations report, battle-field information report, and task organization files. The shift officer will be hampered using this approach because he does not have direct access to the console and must coordinate requirements through the G3 or G2 console operators.

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- Manual - During periods of main relocation appropriate status changes can be obtained from DIVARTY via FM net and recorded manually. This data should be passed to main command post FSE when the relocation is completed so that files may be appropriately updated.

OUTPUT

The output of this task is the status and current tactical environment of DIVARTY units within the division.

NOTES

FSE should not be responsible for any administrative file maintenance. The main command post FSE by virtue of its TACFIRE access is in a better position to assume this responsibility.

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MANUAL TASK

ELEMENT: FSE tactical command post

FUNCTION: Evaluates immediate requests for fire support and target information with other elements, division artillery, or corps FSE.

TASK: Evaluates immediate requests for fire support and target information.

FREQUENCY ESTIMATE: Continuous

CRITICALITY: 1

DUTY POSITION: Shift Officer, Intelligence Sergeant, Operations Specialist

INPUTS

- Corps assignments
- DIVARTY target data
- Maneuver units

OUTPUTS

Target assignment to DIVARTY/TACP

COORDINATION

- Course of action developed to satisfy targeting requests will be coordinated with appropriate staff, DIVARTY, corps and AF (TACP).
- Battle damage assessment from DIVARTY/TACP should be provided in terms of number of rounds by type expended and assessment of accomplishment.

NOTES

- Target support requests can be received by the FSE from corps, DIVARTY (maneuvering unit) or G2. Data provided would include but not necessarily be limited to (corps example): 1) grid; 2) target description; 3) target reliability; 4) life expectancy; 5) required unit movement; 6) other required information.

PERSONNEL

TABLE 32.
FSE Tactical Command Post Manning

<u>Title</u>	<u>Doctrinal Manning for Sustained Manual Operation</u>			<u>Recommended Manning Under TOS</u>		
	<u>Grade</u>	<u>MOS</u>	<u>Number</u>	<u>Grade</u>	<u>MOS</u>	<u>Number</u>
Assistant fire support coordinator	04	13A	1	04	13A	1
Intelligence sergeant	E8	13Z50	1	E8	13Z50	1
Assistant chief fire director computer	E6	13E40	1	E6	13E40	1
Operations specialist	E4	13E20	<u>2</u>	E4	13E20	<u>2</u>
Total Officer/Enlisted Men			1/4			1/4

This table depicts the manning a division might employ doctrinally to sustain a 24-hour capability in a tactically deployed manual element and an estimated affect TOS might have on that manning.

There appears to be no significant reason to adjust manning to support FSE tactical command post operations. The officer will provide the basic control, direct crew members in their tasks and advise the commander on targeting, immediate fire support requests and task organization adjustments. The intelligence sergeant and assistant chief fire director computer will function as crew NOCIC for the two twelve hour shifts. They will be required to develop the artillery estimate for the shift officer, interface with the G2 or G3 console operations as required and process all status information. The NCOIC's will also be required to maintain all manual logs and/or charts required by the shift officer. The two operations specialists will handle all contact with DIVARTY by processing all message traffic in and out of the tactical command post. The operations specialist may also be assigned other administrative and command post relocation tasks as determined by the shift officer or crew NCOIC.

RECOMMENDATIONS

Use the main command post FSE files at the tactical command post.

As indicated in the task descriptions, the FSE personnel at the tactical command post have the option to access and use the main command post FSE files directly or develop their own through the various query and SRI routines. Because their TOS console access is random and they have no direct TACFIRE access, it is suggested that the tactical command post FSE use the main files directly by controlled distribution initiated by the main command post FSE. Data derived from these files may then be augmented by self initiated queries and/or SRIs to satisfy particular needs of the commander. Once the data is obtained, it can be filed, displayed, and analyzed using a combination of manual and/or TOS procedures at the discretion of the FSE shift officer.

Eliminate tactical command post FSE file responsibilities.

It is suggested that the FSE have no file updating responsibilities. This is based upon the fact that they have no full time access to a TOS or TACFIRE console and because they are users of data not developers of it. Their only contribution to file updating would be during a main command post relocation and even then it is suggested that they merely record the changing situation and provide it to the main command post for insertion when the relocation is completed. This suggestion is in keeping with the concept that the tactical command post is for monitoring and directing tactical forces and not performing administrative responsibilities.